Vol. 1008 Number 2

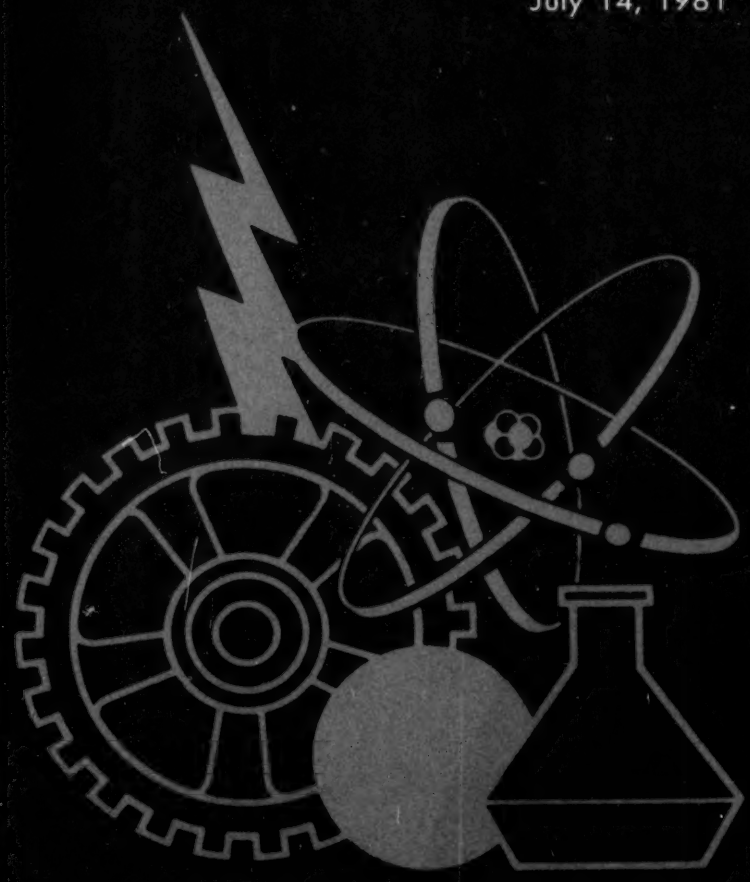
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 14, 1981



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

July 14, 1981 Volume 1008 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95•in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,430,221, Re. S.N. 252,801, Filed Apr. 10, 1981, Cl. 307/125, Proximity Detector, Anthony Rene Barringer, et al., Owner of Record: *Barringer Research Ltd., Ontario, Canada,* Attorney or Agent: James P. Hume, et al., Ex. Gp.: 217

3,540,486, Re. S.N. 253,864, Filed Apr. 13, 1981, Cl. 138/109, HIGH PRESSURE HOSE, James M. Flounders, Owner of Record: *American Biltrite Rubber Co., Inc., Chelsea, Mass.,* Attorney or Agent: Joseph Weingarten, et al., Ex. Gp.: 243

3,590,623, Re. S.N. 239,181, Filed Apr. 3, 1981, Cl. 72/302, METHOD FOR REFORMING AND STRAIGHTENING MEMBERS, Wayne E. Hunnicutt, et al., Owner of Record: *Applied Power, Inc., Brookfield, Wis.,* Attorney or Agent: Fred Wiviott, et al., Ex. Gp.: 321

3,846,900, Re. S.N. 246,036, Filed Mar. 20, 1981, Cl. 29/413, METHOD OF APPLYING RETAINER RINGS FROM INTERCONNECTED RETAINER RING SUPPLY, David E. Weglage, Owner of Record: *Said Weglage Assor. of 50% to Walter Becker (deceased), Kettering, Ohio,* Attorney or Agent: Robert W. Becker, et al., Ex. Gp.: 321

3,996,702, Re. S.N. 245,081, Filed Mar. 18, 1981, Cl. 51/328, COATED ABRASIVE PRODUCT CONTAINING FUSED ZIRCONIA GRAINS AND METHOD FOR ABRADING IRON, Sidney M. Leahy, Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Cruzan Alexander, et al., Ex. Gp.: 323

3,998,943, Re. S.N. 251,034, Filed Apr. 3, 1981, Cl. 424/12, DOUBLE RECEPTOR FLUORESCENT IMMUNOASSAY, Edwin F. Ullman, Owner of Record: *Syva Co., Palo Alto, Calif.,* Attorney or Agent: Bertram I. Rowland, Ex. Gp.: 125

4,041,199, Re. S.N. 253,370, Filed Apr. 13, 1981, Cl. 428/36, REFRACTORY HEAT INSULATING MATERIALS, John Edward Cartwright, Owner of Record: *Foseco International Ltd., Birmingham, England,* Attorney or Agent: Stephen G. Rudisill, et al., Ex. Gp.: 164

4,044,340, Re. S.N. 252,786, Filed Apr. 10, 1981, Cl. 365/208, SEMICONDUCTOR MEMORY, Kiyoo Itoh, Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Paul M. Craig, Jr., et al., Ex. Gp.: 235

4,110,810, Re. S.N. 253,807, Filed Apr. 13, 1981, Cl. 361/213, STATIC CHARGE NEUTRALIZER AND PROCESS, Edward J. Moore, et al., Owner of Record: *E.I. du Pont de Nemours and Co., Wilmington, Del.,* Attorney or Agent: Robert J. Shafer, Ex. Gp.: 212

4,123,007, Re. S.N. 253,731, Filed Apr. 13, 1981, Cl. 239/414, VALVE ASSEMBLY AND SPRAYING APPARATUS THEREFOR, Charles R. Gardner, Owner of Record: *Poly-Glas Systems, Inc., Sun Valley, Calif.,* Attorney or Agent: Thomas R. Juettner, et al., Ex. Gp.: 313

4,144,162, Re. S.N. 243,067, Filed Mar. 12, 1981, Cl. 208/13, METHOD FOR THE CONTAINMENT OF OILS AND OIL SLUDGES, Allen C. Edgar, et al., Owner of Record: *Mid-Florida Mining Co., Lowell, Fla.,* Attorney or Agent: C. Douglas McDonald, Jr., Ex. Gp.: 116

4,148,704, Re. S.N. 252,666, Filed Apr. 9, 1981, Cl. 204/181C, METHOD FOR CATHODIC ELECTRODEPOSITION OF COATING COMPOSITIONS CONTAINING DIELS-ALDER ADDUCTS, Ivan H. Tsou, Owner of Record: *Grow Chemical Corp., New York, N.Y.,* Attorney or Agent: Ralph M. Burton, et al., Ex. Gp.: 114

4,149,097, Re. S.N. 252,657, Filed Apr. 9, 1981, Cl. 307/212, WAVEFORM TRANSITION SENSITIVE JOSEPHSON JUNCTION CIRCUIT HAVING SENSE BUS AND LOGIC APPLICATIONS, Sadeg M. Faris, Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Thomas J. Kilgannon, Jr., et al., Ex. Gp.: 254

4,149,513, Re. S.N. 254,956, Filed Apr. 13, 1981, Cl. 125/006, DEEP TEXTURE HAMMER, Howard P. Gooden, Owner of Record: *Goodwall Construction Co., Houston, Tex.,* Attorney or Agent: David M. Ostfeld, et al., Ex. Gp.: 323

4,150,702, Re. S.N. 253,464, Filed Apr. 13, 1981, Cl. 411/310, LOCKING FASTENER, Horace D. Holmes, Owner of Record: *Inventor,* Attorney or Agent: Allen M. Krass, et al., Ex. Gp.: 355

4,150,749, Re. S.N. 255,107, Filed Apr. 17, 1981, Cl. 209/437, ORE CONCENTRATOR TABLE SUPPORT, Walter W. Stevens, Owner of Record: *Inventor,* Attorney or Agent: Max E. Shirk, Ex. Gp.: 177

4,150,897, Re. S.N. 255,132, Filed Apr. 17, 1981, Cl. 356/152, WHEEL MOUNTED VEHICLE WHEEL ALIGNER, Thomas E. Roberts, et al., Owner of Record: *Inventor,* Attorney or Agent: Robert S. Kelly, et al., Ex. Gp.: 222

4,157,269, Re. S.N. 253,441, Filed Apr. 13, 1981, Cl. 148/1.5, UTILIZING POLYSILICON DIFFUSION SOURCES AND SPECIAL MASKING TECHNIQUES, Tak Hung Ning, et al., Owner of Record: *International Business Machines Corp., New York, N.Y.,* Attorney or Agent: John J. Goodwin, et al., Ex. Gp.: 111

4,177,102, Re. S.N. 254,972, Filed Apr. 16, 1981, Cl. 156/472, SINGLE FACER FOR MANUFACTURING SINGLE-FACED CORRUGATED BOARD, Masateru Tokuno, Owner of Record: *Rengo Co., Ltd., Osaka, Japan,* Attorney or Agent: Robert B. Frailey, et al., Ex. Gp.: 161

4,178,653, Re. S.N. 246,285, Filed Mar. 23, 1981, Cl. 15/383, IMPROVED AGITATOR CHAMBER, Donald B. Tschudy, Owner of Record: *Hoover Co., North Canton, Ohio,* Attorney or Agent: Gerald H. Kreske, et al., Ex. Gp.: 242

4,181,460, Re. S.N. 253,115, Filed Apr. 10, 1981, Cl. 414/400, ARTICLE HANDLING APPARATUS, David W. Lutz, Owner of Record: *Automatic Truckloading System, Inc., Carlisle, Pa.,* Attorney or Agent: John J. Byrne, et al., Ex. Gp.: 314

4,181,565, Re. S.N. 233,962, Filed Feb. 12, 1981, Cl. 162/076, PROCESS FOR COOKING LIGNOCELLULOSIC MATERIAL IN THE PRESENCE OF HYDROXYANTHRACENES AND DERIVATIVE THEREOF, Masato Nakamura, et al., Owner of Record: *Honshu Sieshi Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: James E. Armstrong, III, et al., Ex. Gp.: 173

4,201,825, Re. S.N. 252,532, Filed Apr. 9, 1981, Cl. 428/263, METALLIZED TEXTILE MATERIAL, Harold Ebneth, Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Federal Republic of Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 164

4,202,957, Re. S.N. 238,569, Filed Feb. 26, 1981, Cl. 528/77, THERMOPLASTIC POLYURETHANE ELASTOMERS FROM POLYOXYPROPYLENE POLYOXYETHYLENE BLOCK COPOLYMERS, Henry W. Bonk, et al., Owner of Record: *The Upjohn Co., Kalamazoo, Mich.,* Attorney or Agent: Denis A. Firth, et al., Ex. Gp.: 143

4,213,743, Re. S.N. 255,137, Filed Apr. 17, 1981, Cl. 417/229, PUMP ASSEMBLY DRIVEN BY ENDLESS CONVEYOR, Frank K. Hurt, Owner of Record: *Mefcor, Inc., Bluefield, Va.,* Attorney or Agent: B. Franklin Griffin, Jr., et al., Ex. Gp.: 343

4,221,285, Re. S.N. 246,646, Filed Mar. 23, 1981, Cl. 194/1G, COIN CHUTE TO ACCOMMODATE VARIOUS COIN SLIDES HAVING DIFFERENTLY SIZED COINS AND COIN COMBINATIONS, Harry Greenwald, et al., Owner of Record: *Walter Kidde & Co., Inc., Clifton, N.J.,* Attorney or Agent: Lloyd McAulay, et al., Ex. Gp.: 311

4,245,937, Re. S.N. 244,009, Filed Mar. 16, 1981, Cl. 407/105, CLAMPING MECHANISM FOR CUTTING INSERT, Robert A. Erickson, Owner of Record: *Kennametal, Inc., Latrobe, Pa.,* Attorney or Agent: Lawrence R. Burns, Ex. Gp.: 324

4,252,220, Re. S.N. 253,385, Filed Apr. 13, 1981, Cl. 190/041, GARMENT BAG ASSEMBLY, Wallace London, et al., Owner of Record: *Inventor,* Attorney or Agent: Samuel Lebowitz, Ex. Gp.: 241

COMMISSIONER'S NOTICE

Practice under 37 CFR §1.225(b)

When a junior party to an interference is placed under an order to show cause why judgment should not be entered pursuant to 37 CFR §1.225 and requests final hearing to contest an ancillary matter, either the junior or senior party may file a motion for permission to take testimony pursuant to 37 CFR §1.225(b) and the last sentence of 37 CFR §1.251(b). However, some uncertainty has arisen as to when the motion must be filed and what it must contain.

Motion by the Junior Party

When a junior party is placed under an order to show cause and the junior party desired a testimony period, the motion for permission to take testimony should be filed preferably before the time set for responding to the order to show cause. The motion will be considered timely, however, if filed no later than twenty (20) days after the Board of Patent Interferences enters an order setting final hearing.

There are instances where the requested testimony relates to priority. For example, the junior party may occasionally desire to take testimony to establish prior inventive acts alleged in a preliminary statement even though those acts are subsequent to the senior party's effective filing date. This situation arises when (1) the junior party's preliminary statement dates fall between the filing date of the senior party's involved application and the filing date of a prior application accorded to the senior party, (2) the junior party has unsuccessfully contended in a motion under 37 CFR §1.231 that the senior party should not be accorded benefit of the prior application, and (3) the junior party has requested final hearing to review the examiner's adverse decision on the motion.

When the requested testimony includes priority testimony, the motion to take testimony may be *pro forma, viz.,* a simple request that a testimony period be set to obtain priority evidence. Normally, however, when a junior party seeks to take testimony under 37 CFR § 1.225(b), the proposed testimony relates solely to ancillary matters. When the requested testimony relates solely to ancillary matters, the motion must comply with the provisions of 37 CFR §1.225(b)—a showing of good cause must be submitted and a *pro forma* request would not be sufficient. See generally Rivise & Caesar, *Interference Law and Practice,* Vol. III, §§376–377 (1947).

Motion by the Senior Party

There are occasions when a senior party may desire a testimony period even if the junior party does not request a testimony period. See e.g., *Lorenian v. Winstead,* 127 USPQ 501 (Bd.Int. 1959). When a senior party desires a testimony period, the motion for permission to take testimony should be filed promptly after the Board of Patent Interferences enters an order setting final hearing, but in no event later than twenty (20) days after entry of such order. A senior party should take into account the fact that a junior party will begin preparation of a brief for final hearing after receiving notice of the briefing schedule. Therefore, a senior party should not be permitted to let a junior party expend unnecessary energy preparing a brief for final hearing if the senior party plans to move to take testimony.

As in the case of a junior party, a request to take testimony relating to priority may be *pro forma.* A request to take testimony limited to ancillary matters must comply with 37 CFR §1.225(b). See 37 CFR 1.251(b), last sentence.

June 15, 1981.

RENE D. TEGTMEYER,
Acting Commissioner of Patents and Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of July 14, 1981

3,765,763	4,233,783	4,247,430	4,258,546
3,817,333	4,234,591	4,247,637	4,258,814
4,049,648	4,235,902	4,247,787	4,259,027
4,115,533	4,236,833	4,247,849	4,259,204
4,147,767	4,238,172	4,247,972	4,259,571
4,160,095	4,238,248	4,248,093	4,259,788
4,172,801	4,238,438	4,248,299	4,260,441
4,172,897	4,238,450	4,248,453	4,260,598
4,174,991	4,239,156	4,248,597	4,260,621
4,179,326	4,239,483	4,248,741	4,260,692
4,186,186	4,239,768	4,248,843	4,261,138
4,188,335	4,239,835	4,249,246	4,261,270
4,188,898	4,240,048	4,250,035	4,261,541
4,192,749	4,240,694	4,250,044	4,261,919
4,194,472	4,240,755	4,250,991	4,261,961
4,196,042	4,242,087	4,251,186	4,262,003
4,197,239	4,242,993	4,251,573	4,262,156
4,199,521	4,243,215	4,251,722	4,262,419
4,204,433	4,243,287	4,251,779	4,262,676
4,211,799	4,243,554	4,251,786	4,262,693
4,215,867	4,244,077	4,252,235	4,262,746
4,218,324	4,244,259	4,252,291	4,263,014
4,219,665	4,244,447	4,252,423	4,263,501
4,220,258	4,244,516	4,252,723	4,264,438
4,222,012	4,244,598	4,252,804	4,264,479
4,223,129	4,244,941	4,253,162	4,264,615
4,224,070	4,245,646	4,253,273	4,264,753
4,224,237	4,246,099	4,253,744	4,264,773
4,225,383	4,246,155	4,254,437	4,265,250
4,228,352	4,246,255	4,254,613	4,265,270
4,229,443	4,246,324	4,254,622	4,265,477
4,229,717	4,246,367	4,254,811	4,265,571
4,231,124	4,246,551	4,256,294	4,265,880
4,231,520	4,246,584	4,256,779	4,266,017
4,231,683	4,246,628	4,257,720	4,266,231
4,231,772	4,246,697	4,257,838	4,266,408
4,232,071	4,247,118	4,258,173	4,267,593
4,233,153			

Disclaimers

3,663,369.—*Alpha Morehouse; Ronald C. Malzahn* and *John T. Day,* Muscatine, Iowa. HYDROLYSIS OF STARCH. Patent dated May 16, 1972. Disclaimer filed Apr. 15, 1981, by the assignee, *Grain Processing Corp.*

Hereby enters this disclaimer to claims 1 through 9, inclusive of said patent.

3,706,940.—*Jerry Hausner,* Flushing, N.Y. HIGH FREQUENCY SWEEP GENERATOR. Patent dated Dec. 19, 1972. Disclaimer filed Apr. 13, 1981, by the assignee, *The Narda Microwave Corp.*

Hereby enters this disclaimer to claims 1, 4, 5 and 17 of said patent.

3,913,225.—*Eduard W. Tietjens* and *Dirk Jan Van Hemmen,* Drachten, Netherlands. DRY SHAVING APPARATUS WITH SHEAR PLATE BIASING MEANS. Patent dated Oct. 21, 1975. Disclaimer filed May 4, 1981, by the assignee, *U.S. Philips Corp.*

Hereby enters this disclaimer to claims 1, 2, 5 and 7 of said patent.

4,035,073.—*George Del Vecchio,* North Rose, N.Y. DUPLEX REPRODUCTION MACHINE. Patent dated July 12, 1977. Disclaimer filed Apr. 16, 1981, by the assignee, *Xerox Corp.*

Hereby enters this disclaimer to claims 1-6 and 8-12 inclusive of said patent.

4,053,015.—*Joseph T. Hamrick;* Roanoke and *Leslie C. Rose,* Rocky Mount, Va. IGNITION PROCESS FOR DOWNHOLE GAS GENERATOR. Patent dated Oct. 11, 1977. Disclaimer filed May 4, 1981, by the assignee, *World Energy Systems.*

Hereby enters this disclaimer to all claims of said patent.

4,059,867.—*Robert J. Adamis,* San Mateo, Calif. HANDLE FOR UTENSILS. Patent dated Nov. 29, 1977. Disclaimer filed May 4, 1981, by the inventor.

Hereby enters this disclaimer to claim 1 of said patent.

4,195,637.—*Andreas Gruntzig* and *Hans Gleichner,* Zurich, Switzerland. CATHETER ARRANGEMENT, METHOD OF CATHETERIZATION, AND METHOD OF MANUFACTURING A DILATATION ELEMENT. Patent dated Apr. 1, 1980. Disclaimer filed Apr. 16, 1981, by the assignee, *Schneider Medintag AG.*

Hereby enters this disclaimer to claims 1 to 17 inclusive of said patent.

4,202,483.—*Frederick Stirling Sillars,* Beverly, Mass. CAN BODY CONVEYOR WITH ANTI-ROTATION MECHANISM. Patent dated May 13, 1980. Disclaimer filed Mar. 27, 1981, by the assignee, *USM Corp.*

Hereby enters this disclaimer to claims 1 to 6 of said patent.

4,213,221.—*Alphonse Casimer Kulik;* Ipswich, Mass. WIPER MOTION STOP. Patent dated July 22, 1980. Disclaimer filed Mar. 18, 1981, by the assignee, *USM Corp.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

4,214,923.—*Robert J. Price,* Peoria, Ill. METHOD FOR TREATING METAL. Patent dated July 29, 1980. Disclaimer filed Apr. 30, 1981, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 1-9 of said patent.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing.

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National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP
1900 Half St., S.W.
Washington, D.C. 20324

Patent application 6-206,413. Fluid-Cooled Electrical Conductor. Filed Nov. 30, 1980.

Patent application 6-206,414. Cursor Apparatus Interactive Graphic Display System. Filed Nov. 13, 1980.

Patent application 6-206,415. High Voltage Driver Amplifier Apparatus. Filed Nov. 13, 1980.

Patent application 6-207,830. A Laser Designator Test Tool Apparatus. Filed Nov. 17, 1980.

Patent application 6-210,476. Universal Timing Array. Filed Dec. 4, 1980.

Patent 4,242,899. Thermoclamps. Filed Mar. 5, 1979. Patented Jan. 6, 1981. Not available NTIS.

Patent 4,243,697. Self Biased Ferrite Resonators. Filed Mar. 14, 1979. Patented Jan. 6, 1981. Not available NTIS.

Patent 4,244,053. Privacy Communication Method and System. Filed Sept. 10, 1970. Patented Jan. 6, 1981. Not available NTIS.

Patent 4,245,477. Internal Heater Module for Cryogenic Refrigerators and Stirling Heat Engines. Filed July 18, 1979. Patented Jan. 20, 1981. Not available NTIS.

Patent 4,245,860. Missile Hoisting Sling. Filed May 3, 1979. Patented Jan. 20, 1981. Not available NTIS.

Patent 4,245,911. Economical Fast Scan Spectrometer. Filed Feb. 23, 1979. Patented Jan. 20, 1981. Not available NTIS.

Patent 4,246,252. Gas Generating System for Chemical Lasers. Filed Apr. 13, 1979. Patented Jan. 20, 1981. Not available NTIS.

Patent 4,246,585. Subarray Pattern Control and Null Steering for Subarray Antenna Systems. Filed Sept. 7, 1979. Patented Jan. 20, 1981. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Director, Navy Patent Program/
Patent Counsel for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6-179,863. Michael Reaction of Methylenemalonates with Nitro Compounds. Filed Aug. 20, 1980.

Patent application 6-217,269. Improved Electrolyte for Lithium-Thionyl Chloride Battery. Filed Dec. 17, 1980.

Patent application 6-219,689. Lightweight Concrete Using Polymer Filled Aggregate for Ocean Applications. Filed Dec. 24, 1980.

Patent application 6-224,776. Unsymmetrical Polynitrocarbonates and Symmetrical 1,3-Bis(Halo- and Nitroalkyl Carbonyldioxy)-2,2-Dinitropropanes and Methods of Preparation. Filed Jan. 13, 1981.

Patent application 6-227,311. Servo Control System for the Positioning of an Apparatus. Filed Jan. 22, 1981.

Patent application 6-227,323. Efficient, Precompression, Bandwidth-Tolerant Digital Pulse Expander-Compressor. Filed Jan. 22, 1981.

Patent application 6-227,337. Waveguide Switch. Filed Jan. 22, 1981.

Patent application 6-228,032. N,N,N', N'-Tetrakis(2-Fluoro-2, 2-Dinitroethyl) Oxamide and a Method of Preparation Thereof. Filed Jan. 23, 1981.

Patent 4,231,053. High Electrical Frequency Infrared Detector. Filed Mar. 5, 1979. Patented Oct. 28, 1980. Not available NTIS.

Patent 4,237,428. 15.9 Micron Acetylene Laser. Filed Sept. 1, 1978. Patented Dec. 2, 1980. Not available NTIS.

Patent 4,238,742. Laser System. Filed Aug. 21, 1978. Patented Dec. 9, 1980. Not available NTIS.

Patent 4,239,561. Plateau Propellant Compositions. Filed Nov. 29, 1973. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,241,432. Transducer-Reflector System. Filed Apr. 21, 1967. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,248,257. Flood Valve. Filed Mar. 26, 1979. Patented Feb. 3, 1981. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters
NASA Code GP-4
Washington, D.C. 20546

Patent application 6-186,881. Optical Crystal Temperature Gauge with Fiber Optic Connections. Filed Sept. 12, 1980.

Patent application 6-199,767. Pulsed Phase Locked Loop Strain Monitor. Filed Oct. 23, 1980.

Patent application 6-210,490. Tunable Injection-Locked Pulsed CO_2 Laser. Filed Nov. 26, 1980.

Patent application 6-214,360. Containerless Melting and Rapid Solidification Apparatus and Method. Filed Dec. 8, 1980.

Patent application 6-218,585. Method of Bonding Plasticized Elastomer to Metal and Article Produced Thereby. Filed Dec. 19, 1980.

Patent application 6-219,640. Rhomboid Prism Pair for Rotating the Plane of Parallel Light Beams. Filed Dec. 24, 1980.

Patent application 6-219,677. High Voltage Planar Multijunction. Filed Dec. 24, 1980.

Patent application 6-219,678. High Voltage V-Groove Solar Cell. Filed Dec. 24, 1980.

Patent application 6-220,213. Linear Magnetic Bearings. Filed Dec. 24, 1980.

Patent application 6-225,499. Holding Fixture for a Hot Stamping Press. Filed Jan. 16, 1981.

Patent 4,206,713. Continuous Coal Processing Method. Filed Sept. 28, 1976. Patented June 10, 1980. Not available NTIS.

Patent 4,218,921. Method and Apparatus for Shaping and Enhancing Acoustical Levitation Forces. Filed July 13, 1979. Patented Aug. 26, 1980. Not available NTIS.

Patent 4,219,107. Speed Control Device for a Heavy Duty Shaft. Filed Dec. 13, 1977. Patented Aug. 26, 1980. Not available NTIS.

Patent 4,224,810. System for Refurbishing and Processing Parachutes. Filed Dec. 21, 1977. Patented Sept. 30, 1980. Not available NTIS.

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RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 30, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-13-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	2-15-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-01-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-28-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-28-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-17-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-14-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-07-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	8-02-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-29-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	10-16-78
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during May 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,131,397 to 3,134,980, inclusive

Plant Patents ..... Numbers 2,399 to 2,406, inclusive

REISSUES

JULY 14, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,672

METHOD FOR FORMING INSERTS IN SHOE SOLES AND THE PRODUCT OBTAINED

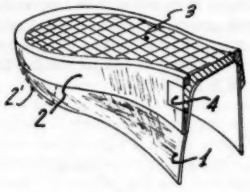
Fosco Brilli, Via Ruscomi, 44, 20027 Milan, Italy

Original No. 4,024,652, dated May 24, 1977, Ser. No. 572,626, Apr. 28, 1975. Application for reissue Feb. 12, 1979, Ser. No. 11,641

Claims priority, application Italy, Apr. 30, 1974, 22108/74

Int. Cl.[3] **A43C** *13/08;* **A43D** *9/00, 65/00*

U.S. Cl. 36—14 **9 Claims**



1. In a process for producing footwear having an upper and a plastic sole attached thereto by injection moulding, the sole comprising an edge portion and a bottom portion differing in colour with part of one of said portions extending into the other of said portion to form a differently coloured insert therein comprising the steps of:

a. Providing an open topped injection mold having its top closed by said upper and having its inner periphery conforming to the outer periphery of said sole,

b. Providing a movable member in the side walls of said mold having an inner [service] *surface* thereof conforming to a portion of the outer periphery of the edge of said sole, said member being movable to an extended position within said mold and to a retracted position with its inner surface conforming to the adjacent inner surface of the inside wall of said mold,

c. Injecting a first sole forming plastic material into said mold with said movable member in one of said positions to partially fill said mold,

d. Moving said movable member to the other of said positions, and

e. Injecting a second sole-forming plastic having a different colour from said first sole-forming plastic to fill said mold and complete the formation of said sole and provide two different colours of plastic in the edge of said sole with portions of one of said sole-forming plastic extending into the other of said sole-forming plastic to provide a coloured insert therein.

Re. 30,673

SIDE VIEW MIRROR EMPLOYING PRISM FOR BLIND SPOT CORRECTION

William Feinbloom, P.O. Box 411, New Paltz, N.Y. 12561

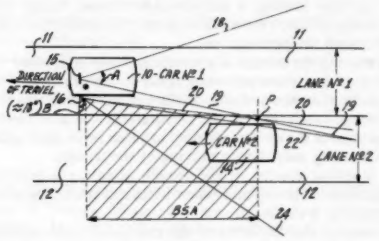
Original No. 4,182,552, dated Jan. 8, 1980, Ser. No. 938,052, Aug. 30, 1978. Application for reissue Feb. 26, 1980, Ser. No. 124,722

Int. Cl.[3] **G02B** *5/08*

U.S. Cl. 350—288 **1 Claim**

1. In combination with a side view mirror of a vehicle, said side view mirror having a relatively planar reflecting surface and positioned on the side of said vehicle near the position of the vehicle driver for providing visual access to the rear of said vehicle, said side view mirror operative in conjunction with a conventional rear view mirror located within said vehicle to enable said driver to view traffic conditions at the rear of said vehicle, said mirrors undesirably providing a blind spot area in said visual field of view at the driver's side of said vehicle, the improvement therewith of apparatus, comprising:

correction means coupled to said side view mirror at an angle with respect thereto of between [six to ten] *twelve to twenty* degrees to provide a visual field of view for said driver determinative of said blind spot area to thereby



enable said driver to have visual access to said blind spot area, wherein said correction means comprises a glass prism positioned over a portion of said planar surface with the base of said prism facing out from the driver's side of the vehicle, the base angle of the prism being between [six to ten] *twelve to twenty* degrees, whereby refraction of light by the glass prism is employed to provide correction of said blind spot area.

Re. 30,674

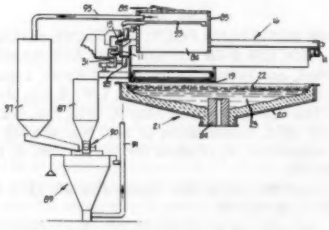
METHOD AND APPARATUS FOR FEEDING A GLASS MELTING FURNACE

Alojzy Wenda, and Leonard E. Olds, both of Arvada, Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Original No. 4,142,880, dated Mar. 6, 1979, Ser. No. 865,644, Dec. 29, 1977. Application for reissue Feb. 28, 1980, Ser. No. 125,609

Int. Cl.[3] **C03B** *3/00*

U.S. Cl. 65—29 **10 Claims**



5. Apparatus [according to claim 3 including] *for depositing particulate batch material over substantially the entire circular top surface of molten material in a circular furnace, comprising:*

(a) a carriage mounted for rotation in a generally horizontal plane over said circular surface about the center of said surface;

(b) means for supporting said carriage;

(c) means for rotating said carriage;

(d) a trough-like hopper carried by said carriage for holding said particulate material, the bottom of said hopper having

material discharge openings, said discharge openings being provided in the bottom of said hopper for a radial extent substantially equal to the radius of the surface of said molten material;

(e) an agitator mounted within said hopper for engaging said particulate material in the vicinity of said openings;

(f) means for driving said agitator whenever said carriage is rotated to effect the flow of said particulate material through said openings; and

(g) means responsive to the thickness of said layer of material, for controlling the [rotating] *rotation* of said carriage.

11. A method for continually depositing a thin, uniformly thick layer of batch material over substantially the entire top surface of molten material in a furnace comprising:

(a) quickly loading a perforated-bottomed trough with a charge of batch material, such that the batch does not pass through the perforations;

(b) moving the trough in a generally horizontal plane above the molten material while agitating the charge of batch material in the vicinity of the perforations so as to discharge batch through the perforations and onto the upper surface of the molten material in a thin layer, said agitation occurring only during moving of the trough;

(c) stopping motion of the trough after a pre-determined distance of travel and when a desired thickness of batch material is deposited;

(d) sensing the depletion of the charge of batch within the trough and in response thereto automatically recharging the trough; and

(e) sensing the thinning of the batch layer to a thickness less than a certain minimal and in response thereto automatically restarting the depositing motion of the trough.

Re. 30,675

DENTIFRICE

Murray L. Schole, 487 Munroe Ave., North Tarrytown, N.Y. 10591

Original No. 4,175,120, dated Nov. 20, 1979, Ser. No. 956,200, Oct. 30, 1978. Application for reissue Dec. 26, 1979, Ser. No. 107,493

Int. Cl.[3] **A61K** *7/22, 7/24*

U.S. Cl. 424—54 **3 Claims**

1. A water-containing dentifrice consisting essentially of strontium edatate in an amount sufficient to provide from about 2.5 wt. % to about 25 wt. % of strontium [ion] *edatate* and from about 0.1 wt. % to about 10 wt. % of a ricinoleate compound said dentifrice being free from strontium edatate-sequestering Ca, Mg, Al, Sn metal.

Re. 30,676

FLAME RESISTANT POLYURETHANE FOAM AND PROCESS FOR PRODUCING THE SAME

Shigeo Mori, and Takeshi Fujita, both of Kyoto, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

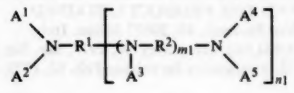
Original No. 4,088,614, dated May 9, 1978, Ser. No. 645,172, Dec. 29, 1975. Continuation of Ser. No. 483,339, Jun. 26, 1974, abandoned. Application for reissue Jan. 8, 1980, Ser. No. 110,501

Claims priority, application Japan, Jun. 26, 1973, 48-72463; Oct. 1, 1973, 48-110799

Int. Cl.[3] **C08G** *18/14, 18/18, 18/20, 18/32*

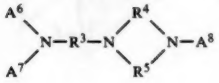
U.S. Cl. 521—110 **17 Claims**

1. A process for producing a flame resistant rigid polyurethane foam comprising reacting a mixture consisting of (i) a polyetherpolyol [and] *or* a polyesterpolyol, each having an active hydrogen atom, (ii) a polyisocyanate, said polyisocyanate being used in an amount of 0.5 to 3 equivalents per 1 equivalent of said polyetherpolyol [and] *or* polyesterpolypol, (iii) at least one blowing agent selected from water and a volatile foaming agent, said water when present being used in an amount of less than about 5% by weight and said volatile foaming agent when present being used in an amount of less than about 70% by weight, said weights being based on the total weight of the starting materials, (iv) an emulsifying agent, said emulsifying agent being used in an amount of less than about 2% by weight based on the total weight of the starting materials, and (v) at least one amine compound selected from general formulae (I), (II), (III), (IV), (V), (VI), and (VII):



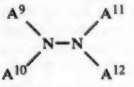
(I)

wherein A^1, A^2, A^3, A^4, and A^5 each represents a hydrogen atom or a monovalent organic group, wherein at least one of A^1 to A^5 being a hydrogen atom or an organic group which contains a hydrogen atom active to an isocyanate group; R^1 is a divalent organic group, a trivalent organic group or a tetravalent organic group; R^2 represents a divalent organic group; m_1 represents 0 or a positive integer smaller than 8; and n_1 represents 1, 2 or 3;



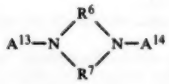
(II)

wherein A^6, A^7, and A^8 each represents a hydrogen atom or a monovalent organic group, with at least one of A^6 to A^8 being a hydrogen atom or an organic group which contains a hydrogen atom active to an isocyanate group; R^3, R^4 and R^5 each represents a divalent organic group;



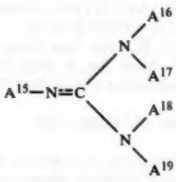
(III)

wherein A^9, A^{10}, A^{11}, and A^{12} each represents a hydrogen atom or a monovalent organic group, with at least one of A^9 to A^{12} being a hydrogen atom or an organic group which contains a hydrogen atom active to an isocyanate group;



(IV)

wherein A^{13} and A^{14} each represents a hydrogen atom or a monovalent organic group, with at least one of A^{13} and A^{14} being a hydrogen atom or an organic group which contains a hydrogen atom active to a isocyanate group and R^6 and R^7 each represents a divalent organic group;

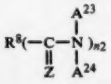


(V)

wherein A^{15}, A^{16}, A^{17}, A^{18}, and A^{19} each represents a hydrogen atom or a monovalent organic group, with at least one of A^{15} to A^{19} being a hydrogen atom or an organic group which contains a hydrogen atom active to an isocyanate group;

(VI)

wherein A^{20}, A^{21} and A^{22} each represents a hydrogen atom or a monovalent organic group, with at least one of A^{20} to A^{22} being a hydrogen atom or an organic group which contains a hydrogen atom active to an isocyanate group; and



(VII)

wherein R^8 represents a hydrogen atom, a monovalent organic group, a divalent organic group, or a trivalent organic group; A^{23} and A^{24} each represents a hydrogen atom or a monovalent organic group, at least one of said R^8, A^{23}, and A^{24} being a hydrogen atom or a group having a hydrogen atom active to an isocyanate group; Z represents an oxygen atom or a sulfur atom; and n_2 is an integer of 1 to 3, the weight ratio of said amine compound to said polyetherpolyol [and] *or* polyesterpolyol being from 7:3 to 3:7, said polyurethane foam being self-extinguishing with a burning distance of 14 to 22 mm as tested in accordance with ASTM D 1692–68.

Re. 30,677

SILICONE CONTAINING BIS-THIOETHER AROMATIC AMINES

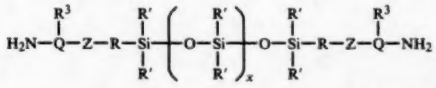
Abe Berger, Summit, N.J., assignor to M&T Chemicals Inc., Woodbridge, N.J.

Original No. 4,139,547, dated Feb. 13, 1979, Ser. No. 906,877, May 17, 1978. Application for reissue Apr. 4, 1980, Ser. No. 137,405

Int. Cl.³ C07F *7/10*

U.S. Cl. 556—423 **5 Claims**

1. A silicone containing bis-thioether aromatic amine having the general formula:



wherein

Q is an aromatic nucleus

Z is sulfur, sulfoxide or sulfone

R is a bivalent group or a functional bivalent group

R′ is a monovalent hydrocarbon radical or a functional hydrocarbon radical

R^3 is a *hydrogen atom, a* hydrocarbon radical or a functional group, and

x is 0 or greater.

Re. 30,678

DORMANT OSCILLATOR GROUND TO NEUTRAL PROTECTION FOR GROUND FAULT INTERRUPTERS

Donald L. Van Zeeland, Franklin, and Russell P. Schuchmann, Racine, both of Wis., assignors to Eaton Corp., Cleveland, Ohio

Original No. 3,878,435, dated Apr. 15, 1975, Ser. No. 434,988, Jan. 21, 1974. Application for reissue Mar. 26, 1976, Ser. No. 670,851

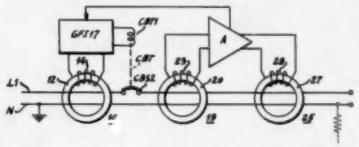
Int. Cl.³ H02H *3/28*

U.S. Cl. 361—44 **15 Claims**

7. A protective system for use in an electrical system having at least a first conductor and a second conductor extending from a source of alternating current to a load, said protective system comprising:

a transformer having a core, a primary on said core and a secondary formed by said at least first and second conductors;

an amplifier;



means to couple the output of said amplifier to said primary of said transformer; and

means including said transformer for causing said amplifier to break into self-sustained oscillations upon the occurrence of a given event relating to said at least first and second conductors.

Re. 30,679

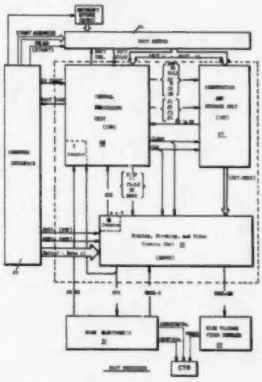
CHARACTER GENERATING METHOD AND SYSTEM

Gregory W. Evans, Mountain View, and Robert L. Caswell, Placentia, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Original No. 4,029,947, dated Jun. 14, 1977, Ser. No. 359,591, May 11, 1973. Application for reissue Jun. 14, 1979, Ser. No. 48,477

Int. Cl.³ G06F *15/20, 3/153*

U.S. Cl. 364—523 **99 Claims**



48. A character generator for generating characters encoded in accordance with a normalized quad of first and second coordinates, each character being encoded in a succession of sets of data, each related to an outline segment of the character and including a beginning line manifestation identifying the initial first coordinate of its outline, segment and outline change manifestations specifying directions of outline, each change manifestation including an identification of the outline to which it relates, and an indication of the number of incremental lengths along the second coordinate to a subsequent set of data, said character generator comprising:

means responsive to a beginning line manifestation for storing the manifestation identifying the initial first coordinate,

means responsive to a change manifestation for a related outline segment, as identified and stored, for computing, in each of its successive computation cycles, a new first coordinate value for its outline in accordance with its associated change manifestation, said means maintaining a stored first coordinate

value for an outline segment for which there is no change manifestation,

means for updating the first coordinate values in accordance with the computed new value thereof, as computed in each computation cycle, and

means responsive to the indication of the number of incremental lengths of each successive change manifestation to request and receive the next successive set of data for the character upon completion of the encoded number of incremental lengths of the present set of data.

PATENTS

GRANTED JUL. 14, 1981

ERRATA

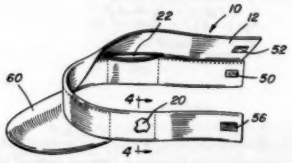
For CLASS	See PATENT NO.
411-337	4,278,005
411-047	4,278,006
181-116	4,278,025
411-190	4,278,120
277-040	4,278,218
369-036	4,278,258
404-117	4,278,368
369-128	4,278,846

PATENTS

GRANTED JULY 14, 1981

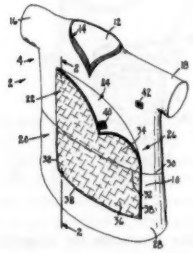
GENERAL AND MECHANICAL

4,277,847
HEADBAND FOR JOGGERS
John D. Florio, Miami, Fla., assignor to Jose Estrada, Miami, Fla.
Filed Apr. 1, 1980, Ser. No. 136,294
Int. Cl.[3] A42B *1/24*
U.S. Cl. 2—12 **6 Claims**



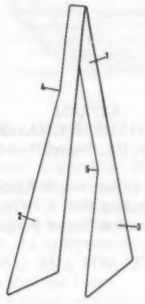
1. A headband for use in sporting events comprising an elongated piece of absorbent material divided into three longitudinally extending sections, a smaller piece of elongated water resistant material covering a portion of two adjacent longitudinally extending sections, wherein said two adjacent longitudinally extending sections are folded one over the other and sewn together to form pockets with said water resistant material comprising the inner lining of said pockets with the remaining longitudinally extending section being foldable over said pockets to provide a cover therefor.

4,277,848
COLOR CHANGEABLE ATHLETIC JERSEY
Melvin G. Boehland, 3170 Park Overlook Dr., Shoreview, Minn. 55112
Filed Mar. 10, 1980, Ser. No. 128,650
Int. Cl.[3] A41B *1/00*
U.S. Cl. 2—115 **12 Claims**



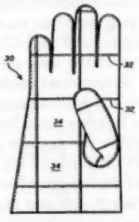
1. An athletic jersey, which comprises:
(a) a body portion having an inside and an outside with the outside being of a substantially uniform first color, wherein the body portion of the jersey includes front and back sides;
(b) a color changing panel on each of the front and back sides of the body portion each of the panels being of a second color different from the first color;
(c) means for selectively covering and uncovering the color changing panels without turning the body portion of the jersey inside out; and
(d) wherein the color changing panels are of sufficient size in relation to the body portion of the jersey such that the jersey appears to be generally of the second color rather than the first color when the color changing panels are uncovered.

4,277,849
ELONGATE GARMENT FOR WOMEN AND GIRLS
Leslie G. Spears, 70, Church St., Chesham, Buckinghamshire, England
Filed Feb. 8, 1980, Ser. No. 119,934
Int. Cl.[3] A41D *25/00*
U.S. Cl. 2—144 **4 Claims**



1. A garment for women and girls which is elongate, has no longitudinal axis of symmetry, and has an intermediate section of constant width and two outer sections which are of different shape, the outher sections increasing in width initially as they extend away from the intermediate section being of different lengths to each other, the length of the intermediate section being at least 29% of the overall length of the garment, the garment having an overall length of 25″ to 70″ and overall width of $\frac{5}{8}$″ to $8\frac{1}{2}$″.

4,277,850
GLOVE AND METHOD FOR MAKING SAME
Murray Strongwater, 822 Moore St., Woodmere, N.Y. 11598
Continuation of Ser. No. 903,211, May 5, 1978, which is a continuation-in-part of Ser. No. 767,508, Feb. 10, 1977, Pat. No. 4,100,623. This application Jun. 27, 1979, Ser. No. 52,408
Int. Cl.[3] A41D *19/00*
U.S. Cl. 2—163 **2 Claims**



1. A fabric glove having finger stalls, provided on at least one side thereof with an applique secured only along the contour thereof to said fabric glove, said applique being made from genuine leather fabric in the piece comprising a plurality of unsupported geometrical sections cut from genuine leather left over scrap, said sections being of selectively predetermined configurations and being secured to each other in end-to-end

and side-by-side relation to form a continuous piece which defines said genuine leather fabric in the piece having ornamental characteristics imparted thereto by said secured together sections of predetermined geometrical configuration, said applique being in the form of a panel having a main body portion and a plurality of discrete upwardly extending elongated segments secured only along the contour thereof to said at least one side of said fabric glove with said elongated segments being in overlying relation with the finger stalls of said fabric glove.

2. A glove in accordance with claim 1, wherein said applique is applied on both the palm side and the back side of the glove.

4,277,851

INTRAOCULAR ANTERIOR CHAMBER IMPLANTS

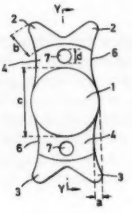
David P. Choyce, 9 Drake Rd., Westcliff-on-Sea, Essex, England SSO 8LR

Continuation-in-part of Ser. No. 907,595, May 19, 1978, abandoned. This application Dec. 4, 1979, Ser. No. 100,120

Claims priority, application United Kingdom, Dec. 22, 1977, 53425/77

Int. Cl.[3] **A61F** *1/16, 1/24*

U.S. Cl. 3—13 **1 Claim**



1. An intraocular anterior chamber implant consisting of an integrally formed elongate structure which comprises:

a central lens which does not exceed 5 mm in diameter;

first and second support members of substantially the same width as the lens diameter, situated on diametrically opposed sides of the lens and spaced therefrom, each support member having a flat support surface which, in use, rests on the iris of an eye into which the implant is inserted; and

first and second bridging members each of which extends between and interconnects an edge of a respective support member and an edge of the lens, the bridging members being shaped and dimensioned such that said support surfaces lie in a common plane spaced from the lens;

wherein each support member has a concave edge remote from the lens such that the support surface thereof is a generally 'U' shaped surface with the members of said U constituting feet and the trough of said U constituting a connecting portion which connects the feet to one another and to the respective bridging member,

wherein each bridging member has concave side edges so that at least a portion of said bridging member is narrower than the lens diameter, and

wherein each bridging member has an aperture between the said edges thereof, said aperture being of at least approximately 1 mm diameter, whereby in use fluid flow can take place through said aperture despite the presence of surgical thread therein.

4,277,852

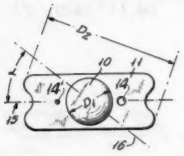
INTRAOCULAR LENS WITH ASTIGMATISM CORRECTION

Stanley Poler, 78 E. Second St., New York, N.Y. 10003

Continuation-in-part of Ser. No. 113,967, Jan. 21, 1980. This application Mar. 20, 1980, Ser. No. 132,275

Int. Cl.[3] **A61F** *1/16, 1/24*

U.S. Cl. 3—13 **16 Claims**



1. As an article of manufacture, a circular optically finished glass intraocular lens element having a central optical axis and finished with a correction for astigmatism, said correction being at a predetermined transverse orientation through said central axis, and a mounting adapter for said lens element, said adapter being of autoclavable material and in retaining engagement with the periphery of said lens element, said adapter having two diametrically opposed radially outwardly extending foot elements adapted for foot-stabilized positioning of the lens element within a chamber of an eye, said foot elements establishing a recognizably unique transverse axis of orientation of said article through said central axis, and said correction orientation having a predetermined angular relation with respect to said unique axis of orientation.

4,277,853

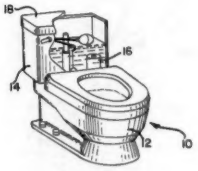
FOR TOILET BOWL CLEANING

Richard L. McDuffee, Aurora, Ill., assignor to Twinoak Products, Inc., Plano, Ill.

Continuation of Ser. No. 964,276, Nov. 28, 1978, abandoned. This application Aug. 27, 1980, Ser. No. 181,906

Int. Cl.[3] **E03D** *9/02;* **B65D** *51/24*

U.S. Cl. 4—228 **8 Claims**



1. In a container for a system for cleaning toilet bowls wherein the container is located within a water tank associated with the bowl, and wherein a cleaning compound located within the container is exposed to the water present in the tank for entry of the compound into the water whereby water containing the compound is delivered to the toilet bowl when the toilet is flushed, the improvement wherein said container comprises an outer wall, a closed bottom wall, an inner wall in contact with said closed bottom wall and a top wall, a first holding space defined between said outer wall and said inner wall and a second holding space defined within said inner wall, a plurality of perforations defined by said inner wall, said top wall defining an opening providing access of water to said perforations, said perforations being exposed to the water when the container is located in said tank, said compound filling one of said holding spaces provided in the container whereby the compound is located directly adjacent a surface of said inner wall for contact of the compound by water in the

area of said perforations, said outer wall and said inner wall comprise coaxially disposed cylinders, wherein the holding space containing the compound has a closed top wall portion and the other said holding space defines a water chamber having an open top wall portion for communicating with said water chamber and said perforations, and means otherwise preventing access of the water to the container whereby the entry of compound into the water is controlled by said perforations.

4,277,854

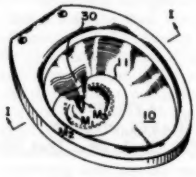
WATER-SAVING TOILET BOWL

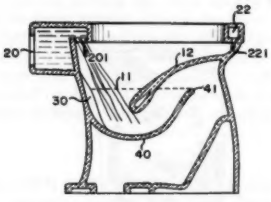
Kuo L. Tsai, 5, Lane 59, Chad Chou St., Taipei, Taiwan

Filed Nov. 26, 1979, Ser. No. 97,442

Int. Cl.³ E03D *11/00*

U.S. Cl. 4—420 **6 Claims**





1. A water saving toilet bowl comprising a bowl defining a water reservoir, flush water guiding means comprising an outwardly projecting convex formation within the bowl smoothly and integrally merging with the inner surface of said bowl and longitudinally extending downwardly into the reservoir from the upper portion of the inner wall surface of the bowl, first and second main flush inlets connected by an intake passage in the bowl to a flush water entrance means and opening into said bowl at opposite sides of said convex guiding means, a front pan extending from the upper inner wall of said bowl opposite said inlets away from said wall and down into said reservoir with a free end presented toward said main flush inlets, said first main flush inlet being so oriented with respect to the bowl wall as to move flush water toward said front pan in streams of both a smaller circle whirlpool around the lower portion of the bowl wall and a larger circle whirlpool around the upper portion of the bowl wall that is deflected by said guiding means to provide a stream toward the interior of the reservoir, and said second main flush inlet means being so oriented with respect to the bowl wall as to provide a relatively straight downward stream of flush water to mix with water from said other streams and effectively flush waste away from said bowl wall.

4,277,855

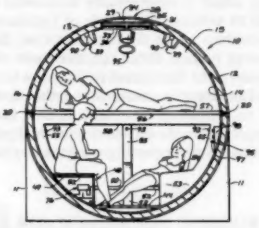
PORTABLE SAUNA

Glen Poss, c/o Crown Dental Labs, W. 508 Sixth Ave., Spokane, Wash. 99204

Filed Jan. 25, 1980, Ser. No. 115,394

Int. Cl.³ A61H *33/02*

U.S. Cl. 4—524 **20 Claims**



1. A portable sauna, comprising:
a support frame;
a hollow ball shaped structure on the support frame having a substantially spherical exterior wall and an inwardly spaced interior wall defining a substantially spherical room, formed about a center point;
a door hinged to the compartment allowing access to the room;
a floor surface within the room;
a bench extending about the floor on an arc centered on an upright axis passing through the center part of the room adapted to support one or more people in a sitting or reclining position;
a loft above the bench opposite the door and adjacent a horizontal plane passing through the center point of the room adapted to support one or more persons in sitting, prone, or reclining positions;
a steam generator having a steam outlet within the room;
reservoir means for supplying water to the steam generator;
means above the loft along the interior wall for radiating heat into the room;
blower means for circulating air within the room; and
heater means associated with the blower means for selectively heating the air passing through the blower.

4,277,856

ARTICLE OF FURNITURE

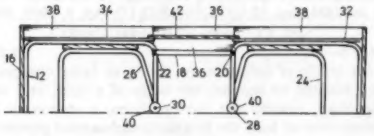
Colin Danin, 14 Homestead Rd., Bedfordview, Transvaal, South Africa

Filed Jun. 8, 1979, Ser. No. 46,790

Claims priority, application South Africa, Jan. 10, 1979, 79/0102

Int. Cl.³ A47C *17/60, 17/62*

U.S. Cl. 5—3 **4 Claims**



1. An article of furniture which comprises:
first and second support members each of which has a cushion supporting section;
at least one planar member supported by at least one of the support members;
the support members being movable between first positions at which the cushion supporting sections are substantially

vertical and are spaced from and oppose one another and at which the planar member is substantially horizontal to form a working top, and second positions at which the cushion supporting sections are substantially horizontal and provide at least part of the sleeping surface; at least one connecting piece adapted to pivotally interconnect the support members at what are their lower ends when at the first positions, each support member having at least one leg which is substantially horizontal and rests on the ground to stabilize the article of furniture when the support members are in the first positions; the support members being pivotal about the free ends of the legs while being moved to the second positions, whereby the legs are pivoted to upright positions and the connecting piece is raised to a position at which it also forms part of the sleeping surface, the legs in the vertical positions supporting the cushion supporting sections horizontally.

4,277,857

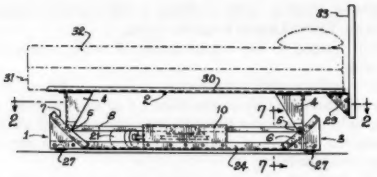
ROCKING MECHANISM FOR BEDS

Oswald C. Svehaug, 780 Gretchen Rd., Chula Vista, Calif. 92010

Filed Nov. 28, 1979, Ser. No. 97,923

Int. Cl.[3] A47D *9/02*

U.S. Cl. 5—62 **5 Claims**



1. An apparatus for imparting a rocking motion of a bed foundation or the like which comprises:

(a) a movable frame defining a longitudinal direction;

(b) first and second longitudinally spaced apart guiding structures, each said guiding structure having at least one traveling surface slanted downwardly toward the other structure;

(c) means for slidingly connecting the movable frame to said traveling surfaces; and

(d) means for imparting a gentle longitudinal reciprocating movement to the movable frame along said guiding structure whereby a slow motion generally rotational about a horizontal virtual axis perpendicular to said longitudinal direction is imparted to said frame.

4,277,858

PIECE OF FURNITURE FOR SITTING AND LYING

Gunther Böhme, Dachswaldweg 55, D-7000 Stuttgart, Fed. Rep. of Germany

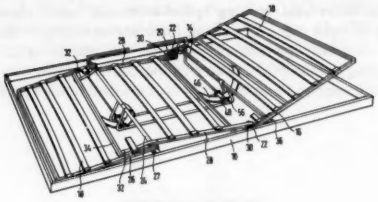
Filed Nov. 14, 1979, Ser. No. 93,971

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849304; Sep. 22, 1979, 7926923[U]; Oct. 5, 1979, 2940364

Int. Cl.[3] A61G *7/06;* **A41C** *19/00*

U.S. Cl. 5—66 **21 Claims**

1. An article of furniture for sitting or lying comprising a surface adapted to support the body of a user, said surface having head, central and foot portions, a stationary frame extending over at least the length of said central portion, said head portion being pivotally mounted to said frame about a horizontal steering shaft and adjustable between horizontal and inclined positions by shifting the weight of the user's body, means for locking said head portion in a selected position, said head portion having extension portions extending toward said foot portion beyond said steering shaft, spring means operative about said steering shaft for equalizing the weight of said head portion, said central portion having longitudinal side members supported by supporting elements comprising pin and slot connections with said extension portions of said head portion,



the slots of said pin and slot connections being upwardly curved.

4,277,859

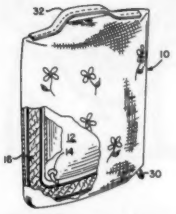
TRAVEL PILLOW

Florence Seaman, 1039 Cecile Dr., Port Moody, Canada V3H 1M5

Filed Jul. 20, 1979, Ser. No. 59,416

Int. Cl.[3] A47C *27/08*

U.S. Cl. 5—434 **3 Claims**



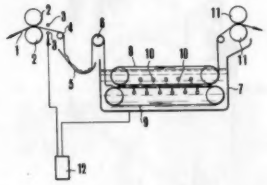
1. A portable pillow for travelers comprising in combination an inner pneumatically inflatable removable bag, an intermediate fiber-filled casing for said inflatable bag, said intermediate casing being closed on three sides and having an opening in one end thereof to receive said inflatable bag and a separate exterior slip cover for said intermediate casing and inflatable bag, whereby in use said inflatable bag is placed within said intermediate casing which in turn is placed within said slip to provide said traveling pillow said casing having an outer covering and an inner covering and a substantial thickness of fibrous material between said outer and inner coverings thus providing an insulating and cushioning cover around said inflatable bag, said intermediate casing having a pocket on said outer covering thereof for the storage of said inflatable bag when deflated and not in use, a carrying case of more compact size than said pillow into which said bag may be fitted when deflated and rolled, said carrying case having a handle for carrying the same, a pneumatic pump, said pneumatic pump for inflating said inflatable bag, said handle of said carrying case having a compartment therein for removably storing said pneumatic pump therein.

4,277,860

METHOD OF HEAT FULLING AND WATER WASHING OF CLOTH

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co. Ltd., Tokyo, Japan

Division of Ser. No. 628,495, Nov. 3, 1975, abandoned, which is a continuation of Ser. No. 478,749, Jun. 12, 1974, abandoned.
This application Apr. 12, 1977, Ser. No. 786,801
Int. Cl.³ D06B *3/20*
U.S. Cl. 8—151 **2 Claims**



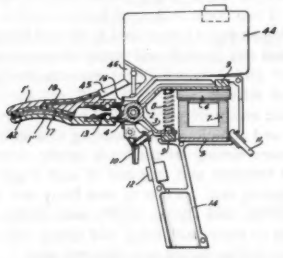
1. A method for cleaning and fulling a cloth, comprising passing the cloth in an untensioned state through an elongated opening formed between a horizontally elongated upper net conveyor and a horizontally elongated lower net conveyor and located within a washing tank filled with cleaning fluid with the vertical spacing of the opening between the conveyors being greater than the thickness of the cloth, spraying hot fluid downwardly through the upper conveyor against the upper surface of the cloth at horizontally spaced positions along the path of travel of the cloth between the conveyors, spraying hot fluid through the lower conveyor upwardly against the lower surface of the cloth at spaced positions different from and alternating with the last mentioned positions for spraying through the upper conveyor into the elongated opening with the spray passing through the upper conveyor into the elongated opening pushing the cloth against the lower conveyor and the spray passing through the lower conveyor into the elongated opening pushing the cloth against the upper conveyor as the cloth moves along the path of travel between the conveyors, and moving the cloth through the elongated opening formed by said pair of conveyors in a wave-like manner, whereby no tension is exerted on the cloth.

4,277,861

CLEANING DEVICE FOR VENETIAN BLINDS

Franz Lex, Annenstrasse 6, A 8020 Graz, Austria

Filed Aug. 27, 1979, Ser. No. 70,316
Claims priority, application Austria, Sep. 4, 1978, 636578
Int. Cl.³ A47L *4/00*
U.S. Cl. 15—102 **10 Claims**



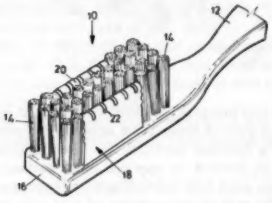
1. A cleaning device for a transversely curved Venetian blind element, which comprises
(a) a housing,
(b) a pair of cooperating cleaning bodies mounted on the housing, each cleaning body having a conformingly curved cleaning part for holding the Venetian blind element therebetween in a cleaning position of the cleaning bodies,
(c) means for manually moving one of the cleaning bodies away from the other cleaning body for spacing the cleaning parts apart, and
(d) a driving system mounted in the housing for transmitting a vibratory cleaning motion to at least one of the cleaning bodies.

4,277,862

TOOTHBRUSH

Christiaan R. Weideman, Johannesburg, South Africa, assignor to Alexander E. Vowles, Marister, South Africa

Filed Nov. 28, 1979, Ser. No. 98,054
Claims priority, application South Africa, Jan. 25, 1979, 79/0329
Int. Cl.³ A46B *9/04*
U.S. Cl. 15—110 **2 Claims**



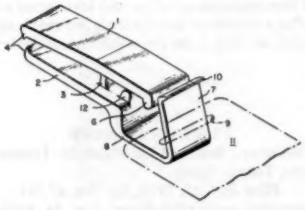
1. A toothbrush which comprises a head, a plurality of tufts of bristles which are fixed to and project from the head, the bristles defining at their free ends an elongate brush surface, and two massage members which extend upwardly from the head and which are located on the opposing longer sides of the brush surface, each massage member having a resilient integral massage surface at or near the brush surface, being adjacent at least three tufts of bristles, and being in line with bristles at each of its ends so that the bristles provide unimpeded brushing action transversely to the massage member.

4,277,863

IDENTIFICATION CARD HOLDER

Daniel Faneuf, c/o Precision Design Co., 66 Nashua St., Milford, N.H. 03055

Filed May 11, 1979, Ser. No. 38,338
Int. Cl.³ A44B *21/00*; A45F *5/02*
U.S. Cl. 24—3 R **5 Claims**



1. A spring clip comprising:
two elongate, relatively stiff members;
a relatively flexible web forming a hinge joining the two members intermediate their ends;
opposed jaw portions on respective members at one side of the hinge; and
a spring finger on one member at the other side of the hinge resiliently biased into engagement against the other member so as yieldingly to hold the jaws closed, the spring

finger forming an open loop disengageable from the other member for insertion through an aperture in an article, whereby the finger serves both as a spring to close the jaws and a holder for the article.

4,277,864

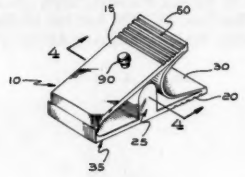
SPRING OPERATED CLIP

Theodore Orson, Sr., Granby, Mass., assignor to Dielectrics Corporation, Chicopee, Mass.

Filed Nov. 21, 1979, Ser. No. 96,465

Int. Cl.³ A44B *1/18*; A44C *3/00*

U.S. Cl. 24—327 **3 Claims**



1. Spring clip integrally molded of synthetic plastic material comprising a pair of lever arms adapted for pivotable movement about a fulcrum provided by interengageable post and socket detents formed on opposed inner surface portions of a pair of bosses, each boss extending from opposite side edges of each arm, the axis of engagement of said post and socket detents extending transversely of the direction of pivotable movement of said lever arms, the inner end portions of said lever arms being in the form of jaws which by manipulation of the outer ends of said lever arms are movable toward and away from each other for selectively clamping and releasing a material disposed therebetween, a resilient spring forming web of synthetic plastic material disposed between the outer end portions of said lever arms, the spring web being generally U-shaped and of substantially lesser thickness than said arm portions of the clip and with the outer end portions of the spring web extending from the outer ends of said lever arms and having a curved central portion disposed toward said detents, said spring web being in unstressed condition when the detents are not engaged and being energized to bias said jaws toward their mutual clamping relation when said post and socket detents are engaged, whereby said jaws are urged closed by said spring web and are opened by compressing said spring by squeezing together the outer end portions of said lever arms, said clip being molded with said bosses spaced apart with their inner surfaces generally co-planar and said spring web in its relaxed condition, said mating post and socket detents adapted to snap-fit into engagement when said lever arms are squeezed together after removal of the clip from the mold, said post and socket detents serving as the pivot fulcrum of the lever arms of said clip.

4,277,865

CURTAIN HANGER

Ietsugu Takazawa, Bancho-Chidorigafuchi Habitation 901.3 Sanbancho, Tokyo, Japan

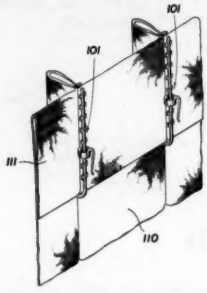
Filed Jun. 12, 1979, Ser. No. 47,721

Claims priority, application Japan, Jun. 14, 1978, 53-81616; Sep. 11, 1978, 53-124691

Int. Cl.³ A44G *21/00*

U.S. Cl. 24—345 **4 Claims**

1. An adjustable curtain hanger comprising a fitting part adapted to be fitted to the upper edge of a curtain, an adjusting rod attached to said fitting part in a manner to extend substantially vertically when in use, a plurality of locking projections in longitudinal spaced relationship on said adjusting rod, a hook member having a fitting cylinder attached thereto which cooperatively engages with said adjusting rod to adjustably suspend a curtain, said fitting cylinder being a cylindric member having a hole therethrough which slidably and rot ably receives said adjusting rod therein, the central axis of sa hole being substantially parallel to the cylindrical axis of sa fitting cylinder, means on said cylindrical member to allo



said locking projections to pass therethrough when said cylir drical member is rotated into the adjusting position, and lock ing means on said cylindrical member adapted to engage sai projections and support said fitting part when said cylindrica member is rotated into the locking position.

4,277,866

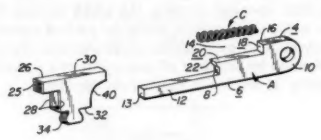
JEWELRY CLASP AND METHOD

Chang J. Song, #20-17, Yangjae-Dong, Kang Nam-Ku, Seoul Rep. of Korea

Filed Jan. 24, 1980, Ser. No. 114,869

Int. Cl.³ A44B *19/00*

U.S. Cl. 24—238 **2 Claim**



1. A jewelry clasp comprising:

a relatively flat, elongate pin body made of malleable metal having a first end and a second end and having a finger element extending from said first end, said finger element being generally J-shaped;

said body having a spring notch formed along the upper edge of said body, said notch being bounded at one end by a spring stop portion of said body and being open at the opposed end thereof, said spring stop portion and the free end of said J-shaped finger element being in opposed, spaced, relation;

a box-like enclosure surrounding at least a portion of said body and completely surrounding said spring notch, said enclosure having an enclosure spring stop element disposed between said free end of said finger element and said spring stop portion of said body and being slidable parallel to said spring notch, said spring stop element having an inner face facing said spring stop portion and a seating surface facing said free end; and

a compression spring captured within said spring notch and between said spring stop portion and said inner face thereby biasing said seating surface against the free end of said finger element to define a closeable aperture bounded by said J-shaped finger element, said enclosure and said pin body.

4,277,867

APPARATUS FOR THE CONTINUOUS DELIVERY OF A YARN OR THE LIKE IN LOOSE FORM

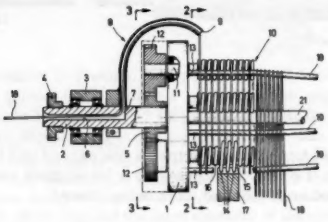
Florian Lucke, Mengen, Fed. Rep. of Germany, assignor to Lucke Apparate-Bau GmbH, Mengen, Fed. Rep. of Germany

Filed Oct. 26, 1979, Ser. No. 88,351

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1978, 2847291

Int. Cl.[3] D02G *1/20*; D02J *1/12, 1/22*

U.S. Cl. 28—220 9 Claims



1. Apparatus for the continuous delivery of a yarn in loose form comprising, in combination,

a bearing support having a plurality of axially parallel screw spindles rotatingly mounted thereon and a plurality of axially parallel reversing pins mounted thereon between the spindles, the axes of the spindles and reversing pins extending in substantially horizontal directions and the reversing pins extending beyond the ends of the spindles to form guide rods,

a flyer rotatable about the bearing support and adapted for depositing a yarn in loops over the reversing pins and into the flights of the spindles,

and means for rotating the spindles about their respective axes in directions to cause the yarn loops to progress to and beyond the ends of the spindles on to the guide rods, whereby the yarn loops become substantially perpendicularly suspended on and gradually advanced along the guide rods by mutual interaction.

4,277,868

MACHINE AND METHOD FOR SINGLE PASS TAPER MILLING

Doyle W. Huber, Kent; Richard H. Smith, and Robert L. Strong, both of Auburn, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 30, 1979, Ser. No. 34,808

Int. Cl.[3] B21B *15/00*

U.S. Cl. 29—33 Q 9 Claims

1. An apparatus for single pass taper milling of a metal strip comprising: an anvil wheel, means for driving a metal strip under tension over the anvil wheel, a milling cutter mounted for radial movement with respect to the anvil wheel, and means for controlling radial movement of the milling cutter based on linear movement of the metal strip to contour mill the strip as it passes over the anvil wheel.

4,277,869

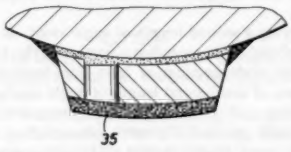
STABILIZER

Charles A. Hartwell, 2923 Freshmeadows, Houston, Tex. 77063

Filed Jul. 30, 1979, Ser. No. 61,904

Int. Cl.[3] B21D *53/10*; F16C *1/26*

U.S. Cl. 29—149.5 R 8 Claims



1. A method of fabricating a splined stabilizer comprising the steps of:

(a) forming an opening completely through a metal spline body which opening extends from a front or outer face and intersects a back face of said body;

(b) positioning an insert of material in said opening which insert is harder than the metal of said metal spline body;

(c) joining said insert to said spline body at said back face by means of a brazing material; and

(d) thereafter joining said spline body to a stabilizer body with the back face of said spline body against the stabilizer body.

4,277,870

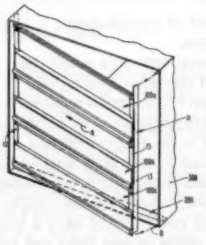
METHOD FOR INSTALLING AN ANGLE BLADE DAMPER

Francis J. McCabe, Doylestown, Pa., assignor to Prefco Products, Inc., Buckingham, Pa.

Division of Ser. No. 891,330, Mar. 29, 1978, Pat. No. 4,185,657, which is a continuation-in-part of Ser. No. 764,774, Feb. 2, 1977, Pat. No. 4,114,646, which is a continuation of Ser. No. 689,994, May 26, 1976, Pat. No. 4,081,173, said Ser. No. 891,330, is a continuation-in-part of Ser. No. 770,831, Feb. 22, 1977, Pat. No. 4,113,230, and Ser. No. 729,831, Oct. 4, 1976, Pat. No. 4,113,232, each is a continuation-in-part of Ser. No. 689,994, , said Ser. No. 891,330, is a continuation-in-part of Ser. No. 874,001, Jan. 31, 1978, Pat. No. 4,165,629, which is a continuation-in-part of Ser. No. 736,823, Oct. 18, 1977, Pat. No. 4,080,860, which is a continuation-in-part of Ser. No. 650,926, Jan. 21, 1976, Pat. No. 4,004,480. This application Sep. 11, 1979, Ser. No. 74,290

Int. Cl.[3] B21D *53/00*; B23P *11/00*

U.S. Cl. 29—157 R 6 Claims



1. A method of installing a damper in an opening comprising the steps of:

(a) providing a length of blade stock having disposed along a longitudinal axis thereof a uniform hook-shaped hinge portion;

(b) providing notched angle stock lengths having periodically spaced therealong hook-shaped hinge elements for receiving and, upon rotation of the blade around a longitu-

dinal axis, for slidingly engaging said blade, at least at opposite ends of said blade;

(c) installing a length of said angle stock against at least one interior surface of said opening;

(d) inserting along a transverse axis with respect to the axis of one of said hinge elements of said installed length of said angle stock at least one end of a length of said blade stock into engagement with said hook-shaped hinge element;

(e) applying a second length of angle stock on the exposed end of said blade such that a portion of the hinge portion of said blade engages at least one hook-shaped hinge element of said second length of angle stock;

(f) pivoting said second angle stock length and said at least one blade generally around said installed angle stock length into a position within said opening wherein opposing hook-shaped hinge elements and said hinge portion of said blade are coaxially oriented; and

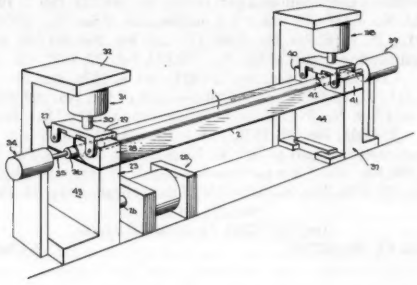
(g) attaching said second angle stock length to the opposing interior surface of said opening, to thereby create a damper within said opening.

4,277,871

HEAT EXCHANGER PANELS AND METHOD OF MANUFACTURE

Humfrey N. Udall, Darien, Conn., assignor to Thermatool Corp., Stamford, Conn.

Filed Jan. 21, 1980, Ser. No. 113,796
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 C **5 Claims**



1. A method of manufacturing a heat exchanger element which comprises:

joining a metal tube to a metal sheet by means of heated metal and thereafter cooling said metal, said sheet being wide relative to the cross-sectional dimension of said tube and being thin relative to its width and the axis of said tube extending in the length direction of said sheet, said tube being joined to said sheet intermediate its width by said heated metal substantially continuously along the length of said tube, whereby upon cooling, said tube and said heated and cooled metal have a length shorter than the outboard edges of said sheet and buckling of said sheet occurs; and

thereafter, mechanically stretching at least said tube along its axis and beyond the elastic limit of the metal thereof and by an amount sufficient to cause its length to be substantially equal to the length of the outboard edges of said sheet and to substantially eliminate ripples in said sheet caused by buckling thereof when the stretching is discontinued.

4,277,872

TOOL FOR INSTALLATION AND REMOVAL RETAINING CLIPS

Joe Lewis, 3460 W. Tulane Dr., Kenner, La. 70062

Filed Dec. 13, 1979, Ser. No. 103,284
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—229 **1 Claim**

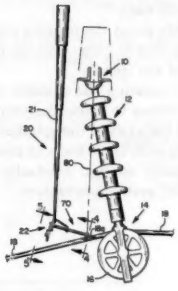
1. A tool for installation and removal of retaining clips, comprising, in combination, a straight shank having a handle on one end thereof, and a pair of spaced-apart blades on its opposite end, said blades being magnetized, a tooth on one said blade, said tooth projecting from a side edge of said blade in a direction that is at right angles to a longitudinal axis of said shank, and an end of said tooth being pointed.

4,277,873

CABLE MARKING DEVICE

Harlan B. Smith, 395 N.W. 10th, Canby, Oreg. 97013

Filed Aug. 8, 1979, Ser. No. 64,722
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—235 **6 Claims**



1. A marking device for providing a datum on a plurality of objects, such as spaced-apart cables having their longitudinal axes lying generally parallel to one another, comprising:

a plurality of attachments for coupling to the cables, each attachment being formed as a resilient annular band having opposed ends, each attachment being elastically deformable radially outwardly;

dispenser means shiftable toward the cables for releasably holding said attachments including guide means defined by a plurality of elongate projections for positioning between the cables to pre-spot an attachment adjacent each of the cables prior to cable-attachment contact, each pair of said projections being spaced-apart to define a cable-receiving slot; and

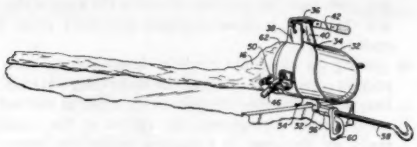
mounting means disposed adjacent said projections, said mounting means being defined by retaining members extending outwardly from said projections for supporting and locating said attachments when they are elastically deformed radially outwardly so that said attachments span across an associated slot, contact of the cables with said attachments resulting in shifting of said attachments from said retaining members so that said attachments are released and inwardly contract to grip circumferential portions of the cables.

4,277,874

AIR FILTRATION BAG REPLACEMENT DEVICE

Michael D. Brown, 27011 Nudgent, and Kenneth A. Brown, P.O. Box 402, both of Boron, Calif. 93516

Filed Sep. 17, 1979, Ser. No. 75,764
Int. Cl.³ B23P 19/02
U.S. Cl. 29—235 2 Claims



1. Apparatus for facilitating the insertion of the cylindrical frame into a filter bag having a circular mouth for collecting airborne particulate matter comprising:

a cylindrical member having an axial discontinuity in the side walls thereof, the outer diameter of the cylindrical member being at least equal to the inner diameter of the mouth of the bag and the inner diameter of the cylindrical member being no less than the outer diameter of the frame;

a rod spanning the discontinuity and attached to the cylindrical member at one side of the discontinuity;

a lever attached to the cylindrical member at the outer side of the discontinuity and coupled to the rod, said lever being manually actuatable to draw the side walls of the cylindrical member together to decrease the outer diameter of the cylindrical member to slightly less than the inner diameter of the mouth of the bag so that the mouth of the bag can be inserted over one end of the cylindrical member, said lever having a over-center locking position when the side walls of the cylindrical member have been drawn together; and

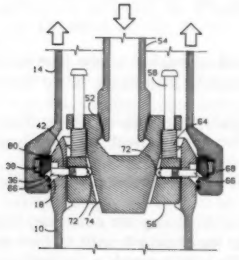
means for clamping the mouth of the bag in position over one end of the cylindrical member so that the frame can be inserted into the bag through the other end of the cylindrical member after the release of the lever.

4,277,875

VMP RISER RELEASE TOOL

J. Robert Worrell, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 4, 1979, Ser. No. 72,725
Int. Cl.³ B23P 19/04
U.S. Cl. 29—253 3 Claims



1. A releasing tool for connecting to the lower end of a string of drill pipe which comprises:

(a) a cam carrier having a longitudinal axis connectable to the lower end of said drill string and having a conical cone section about said axis;

(b) an annular releasing pin block having a plurality of radial holes extending therethrough;

(c) a releasing pin in each said hole with biasing means forcing the inner end of each said pin into the open cylindrical space within said annular releasing pin block;

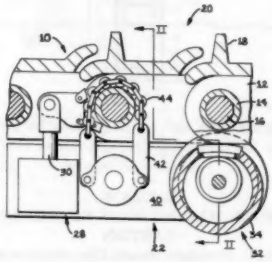
(d) means to support said annular releasing pin block from said cam carrier including biasing means urging said pin block and said cam carrier longitudinally apart and holding said pin block and said cam such that when said releasing block is moved toward said cam carrier that said cam forces said releasing pins outwardly.

4,277,876

METHOD FOR ROTATING A TRACK CHAIN BUSHING

Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 916,974, Jun. 19, 1978, Pat. No. 4,187,744.
This application Sep. 17, 1979, Ser. No. 75,929
Int. Cl.³ B23P 7/00; B21D 53/10
U.S. Cl. 29—402.01 3 Claims



1. In a method for rotating a bushing (14) of an assembled and in place track (10) of a track-type vehicle (20) to expose a new wear surface, said track (10) having interconnected links (12) fitted on opposed ends of the bushing (14), said method including applying a rotative force to the bushing (14), the improvement comprising:

impacting the links (12) and applying a rotative force to the links (12) opposite in direction to the rotative force applied to the bushing (14) connected to the links (12).

4,277,877

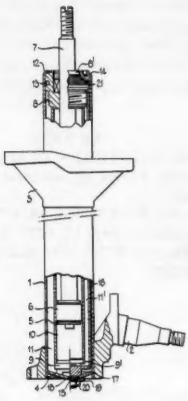
METHOD FOR MOUNTING A REPLACEMENT SHOCK ABSORBER

Martinus de Koning, Oud-Beijerland, Netherlands, assignor to ITT Industries, Inc., New York, N.Y.

Filed Sep. 13, 1979, Ser. No. 75,210
Claims priority, application Netherlands, Sep. 22, 1978, 7809636
Int. Cl.³ B23P 7/00
U.S. Cl. 29—402.08 2 Claims

1. A method for mounting a replacement shock absorber to replace the elements necessary for the damping action in a wheel suspension system which is provided with a housing which is closed at the bottom, to which a wheel carrier is connected and in which the housing comprises at the top a non-removable cylinder cover while the elements inside the housing for the damping action comprise a piston in a cylinder connected by means of a piston rod passing through the cylinder cover to a part of the carriage to be carried by the wheel, and in which the piston in the cylinder and the cylinder rod in the cylinder cover form guides for the wheel suspension system, said method comprising the steps of removing the portion of the top side of the housing which encloses the cylinder cover in a non-detachable way by machining, removing the damping action elements from the housing, providing a bore in the bottom side of the housing, thereafter inserting a replacement shock absorber unit from the top into the housing

whereby the cylinder cover of the replacement shock absorber unit interferingly fits in the top side of the housing, and securing the shock absorber unit to the housing by means of a fastener through the bore of the bottom side of the housing.

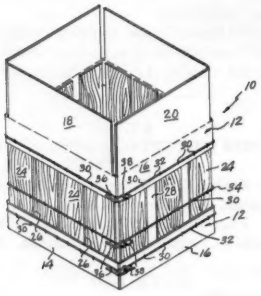


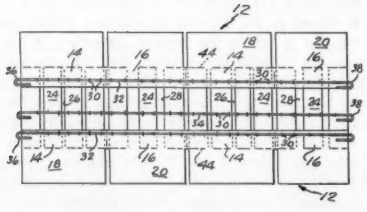
4,277,878

METHOD OF MAKING WIRE-BOUND SHIPPING CARTON

James E. O'Neal, Pompano Beach, Fla., assignor to Vernon E. Ramsey, Inc., Boca Raton, Fla.

Division of Ser. No. 28,700, Apr. 10, 1979, abandoned. This application Nov. 20, 1979, Ser. No. 96,195
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—432 **4 Claims**





1. The method of making a shipping carton for fruits, vegetables, and the like, comprising the steps of:

a. forming substantially identical top and bottom closure members from a pair of planar blanks, each blank having fold lines to define four sides of a rectangular, tubular rim, and slits defining flaps foldable to overlie one another and close one side of the rim;

b. arranging a plurality of slats in spaced parallel relation to one plane;

c. placing the closure member blanks in flat unfolded condition with their rim portions covering the ends of the slats and their flap portions disposed outwardly away from each other;

d. placing an elongated binding element along each rim portion covering the rim and the underlying slat ends; and

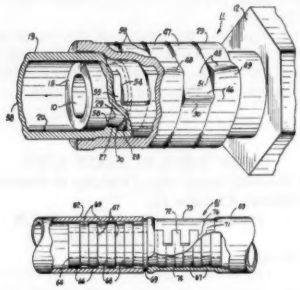
e. fastening the binding elements to the adjacent rim and slat ends, thereby completing the carton in flat condition ready for shipment to a packing destination where the carton may be folded into a box-like structure.

4,277,879

TUBING JOINT ASSEMBLY METHOD

Ralph G. Ridenour, 626 Lexington-Ontario Rd., Mansfield, Ohio 44903

Division of Ser. No. 887,491, Mar. 17, 1978, Pat. No. 4,231,596. This application Nov. 8, 1979, Ser. No. 92,459
Int. Cl.³ B21D *39/00*; B23P *11/02*
U.S. Cl. 29—508 **26 Claims**



1. The method of making a tube joint assembly between inner and outer tubular parts by use of two dies comprising, the steps of,

forming a plurality of peripheral ribs on the outer surface of the inner tubular part with each rib having a laterally extending shoulder and a biting surface,

telescoping the outer tubular part over the inner tubular part,

and laterally compressing the outer part inwardly by two dies having interdigitated teeth to form on the exterior surface of the joint assembly a toothed area of a plurality of circumferentially extending teeth,

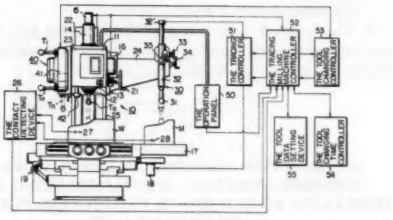
said lateral compression causing said biting surfaces to indent the outer part and form a shoulder on the outer part acting longitudinally against said laterally extending shoulder on the inner part to longitudinally retain together the tubular parts,

and said lateral compression establishing a fluid pressure tight seal which includes an annular area at the junction of the parts generally at said biting surfaces.

4,277,880
TRACING MILLING MACHINE WITH AN AUTOMATIC TOOL CHANGER

Keizo Utsumi, Kanagawa, Japan, assignor to Makino Milling Machine Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1979, Ser. No. 67,285
Claims priority, application Japan, Aug. 5, 1978, 53/95026
Int. Cl.[3] B23Q 3/157, 35/121
U.S. Cl. 29—568 15 Claims



1. A tracing milling machine for duplicating a shape of a model on a workpiece comprising:

a vertical spindle head having a rotatable spindle effective to removably hold a cutting tool;

a tracer portion having a tracer head and a tracer capable of performing a tracing movement over the model;

a work table having a mounting surface on which the model and the workpiece to be machined are fixedly mounted;

means for controlling a servo movement of said work table in vertical and horizontal directions;

an automatic tool changing means for automatically replacing said cutting tool with another cutting tool;

means for defining a predetermined positional relationship between said another cutting tool and said tracer; and

means for automatically establishing said predetermined positional relationship whenever said automatic tool changing means completes its replacement of said cutting tool.

4,277,881
PROCESS FOR FABRICATION OF HIGH DENSITY VLSI CIRCUITS, HAVING SELF-ALIGNED GATES AND CONTACTS FOR FET DEVICES AND CONDUCTING LINES

Gordon C. Godejahn, Jr., Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 26, 1978, Ser. No. 909,886
Int. Cl.[3] H01L 21/225, 29/78
U.S. Cl. 29—571 10 Claims

1. A process for fabricating very large scale integrated circuits including field effect semiconductor devices and conducting lines on a monocrystalline silicon semiconductor substrate having a first surface on which said integrated circuits are to be formed, comprising the steps of:

forming a field oxide on said first surface surrounding and isolating selected areas of said first surface on which respectively corresponding active devices are to be formed,

thermally growing a silicon dioxide layer on said selected areas of said first surface, of a thickness suitable for the gate insulator layer of an active device,

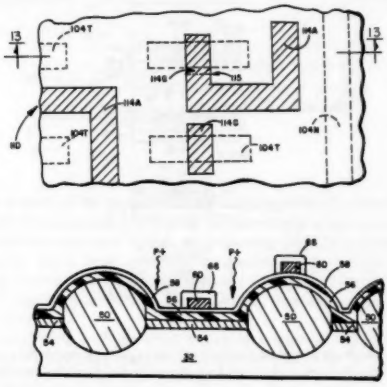
forming a silicon nitride layer on said silicon dioxide layer extending at least over said selected areas,

depositing a layer of doped polysilicon on said nitride layer,

delineating said polysilicon layer to define a gate polysilicon layer extending transversely of said selected area for each said active device and to define polysilicon conducting lines of said field oxide, and removing remaining portions of the polysilicon layer, said gate polysilicon layer defining first and second, remaining portions of said selected area corresponding to source and drain regions to be formed for each said active device,

oxidizing the surfaces of said gate polysilicon layer and of said polysilicon conducting lines while retaining the silicon nitride layer over said source and drain regions of each active device to prevent the formation of any substantial amount of thermal oxide on said source and drain regions,

removing exposed portions of the silicon nitride layer by a material selective, batch etch removal process, thereby to



expose the underlying silicon dioxide layer on said source and drain regions,

removing the silicon dioxide layer uncovered by removal of the portions of the nitride layer, thereby to expose the surface of said substrate at said source and drain regions to be formed for at least selected ones of said active devices thereby to provide self-aligned vias for contacts to said source and drain regions to be formed for said selected active devices, and

doping said first and second portions to form said source and drain regions for said selected, active devices.

4,277,882
METHOD OF PRODUCING A METAL-SEMICONDUCTOR FIELD-EFFECT TRANSISTOR

Peter A. Crossley, Garden Grove, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Dec. 4, 1978, Ser. No. 966,182
Int. Cl.[3] B01J 17/00; H01L 21/265
U.S. Cl. 29—571 4 Claims

1. A method of producing a Schottky-barrier, field-effect transistor comprising:

providing a semiconductor body of one conductivity type and a low impurity concentration;

forming an ion implantation layer of said one conductivity type through the surface of said body, said ion implantation layer having a higher impurity concentration than said semiconductor body;

oxidizing said surface of the body to provide an electrically insulating oxide layer portion of said body over the ion implantation layer;

masking an area of said insulating oxide layer wherein said area is surrounded by an exposed portion thereof;

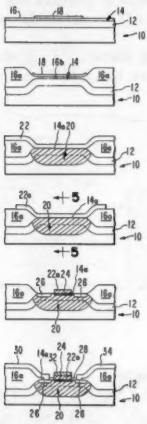
oxidizing the body again at a high temperature to increase the thickness of the exposed portion of said insulating oxide layer to form a field oxide layer;

removing the mask and said thin oxide thereunder to expose a region of higher impurity beneath the area previously covered by the mask;

forming a region of opposite conductivity type opposite to

said one conductivity type in said body in the exposed region and extending the region of opposite conductivity type under a portion of oxide layer and into the semiconductor body beneath the ion implantation layer;

providing a conductive gate forming a Schottky junction



with an exposed portion of the region of opposite conductivity type and extending over the field oxide layer but not in contact with any region of said one conductivity type; and

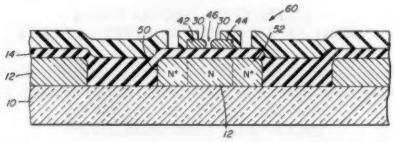
forming source and drain regions in said region of opposite conductivity type adjacent said gate.

4,277,883

INTEGRATED CIRCUIT MANUFACTURING METHOD

Steven H. Kaplan, Acton, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 864,294, Dec. 27, 1977, abandoned.
This application Nov. 8, 1979, Ser. No. 92,612
Int. Cl.[3] H01L *21/308*
U.S. Cl. 29—571 **10 Claims**



3. A method for forming a semiconductor structure comprising the steps of:

(a) forming a semiconductor layer on a substrate;

(b) forming an insulating layer over the semiconductor layer;

(c) forming a masking layer over the insulating layer;

(d) masking a portion of the masking layer with a mask;

(e) depositing particles into unmasked portions of the masking layer to form separated regions of such particles;

(f) diffusing the particles into masked portions of the masking layer to extend the separated regions, symmetrically, partially into the masked portions of the masking layer to separate such regions a predetermined width, with such separated regions having a predetermined particle concentration;

(g) forming an aperture in such masking layer having a predetermined width to expose a portion of a surface of the insulating layer comprising the step of exposing the masking layer to a chemical etchant to selectively remove portions of the masking layer which have a particle concentration below the predetermined particle concentration;

(h) bringing an etchant into contact with the entire surface portion of the insulating layer exposed by the aperture, removing the entire portion of the surface of the insulating layer exposed by the aperture and forming an aperture in such insulating layer; and

(i) depositing a metal through the aperture in the insulating layer onto an exposed portion of the semiconductor layer forming a Schottky gate contact between the metal and the semiconductor layer.

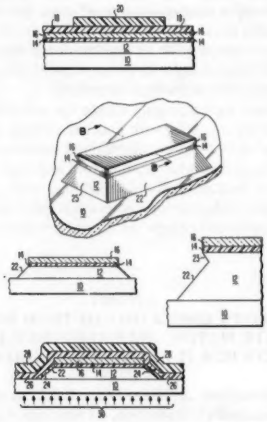
4. The method recited in claim **3** including the additional step of concurrently forming an enhancement mode field effect transistor on such substrate.

4,277,884

METHOD FOR FORMING AN IMPROVED GATE MEMBER UTILIZING SPECIAL MASKING AND OXIDATION TO ELIMINATE PROJECTING POINTS ON SILICON ISLANDS

Sheng T. Hsu, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 4, 1980, Ser. No. 174,845
Int. Cl.[3] H01L *21/205, 21/84*
U.S. Cl. 29—571 **5 Claims**



1. A process for forming an improved gate structure for a metal-oxide-semiconductor device wherein an island of silicon is formed on an insulating substrate, the island having slanted side walls producing a base surface adjacent the substrate that is broader and longer than the top surface thereof and characterized by the presence of an objectionable projecting point at the upper portion of the side walls adjacent the top surface, comprising the steps of:

forming a layer of gate oxide on the top surface of the island;

forming a masking layer over the layer of gate oxide;

forming a layer of silicon oxide on the side walls of the island;

removing portions of the silicon oxide on the side walls to expose the projecting point;

oxidizing the projecting point to form a bird beak portion extending between and joining the gate oxide with the remaining portions of the silicon oxide;

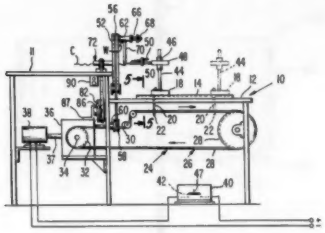
removing the masking layer to expose the gate oxide layer; and

forming a gate member on the exposed layer of gate oxide to extend over the bird beak portion.

4,277,885
MACHINE FOR MANUFACTURING WREATHS

Monty Scudder, Bordentown-Chesterfield Rd. R.R.#2, Box 192, Trenton, N.J. 08620

Filed Feb. 21, 1979, Ser. No. 13,756
Int. Cl.³ B23P *19/04;* A46D *3/04*
U.S. Cl. 29—780 2 Claims



2. A machine for making wreaths of the type having a plurality of connected sections each of which is formed of a core element, decorative facings to the core element, comprising:

(a) a support frame;

(b) a carriage mounted for rectilinear movement upon said support frame, said carriage including rotatable gripping means for releasably holding one end of a core element to be wrapped with facing materials;

(c) a wrapping wheel rotatably mounted upon the support frame, said wrapping wheel including an annular member having an open center, and a spool rotatably mounted upon the periphery of the annular member, said carriage being movable upon the support frame in a direction away from the wheel and being adapted to support a core element with the length of the core element extending substantially axially of the wheel, whereby to feed the core element through the wheel responsive to movement of the carriage away from the wrapping wheel and thus spirally wrap said wire about the core element and about facings applied thereto as the core element is fed through the wheel with the wheel being rotated thereabout;

(d) drive means for the wrapping wheel and carriage adapted to be started and stopped under the control of a user, for conjoint starting, stopping, and movement of the wrapping wheel and carriage, said carriage being adapted for releasable engagement with the drive means, whereby to free the carriage for return to a starting position adjacent the wrapping wheel following the wrapping of a core element after the core element has been fed through the wrapping wheel;

(e) a support member for the core element mounted upon the support frame for rotational movement about an axis common to the axis of rotation of said gripping means, said support member having an end-to-end passage in which the core element is freely slidable, said support member and carriage being mounted upon the support frame at opposite sides of the wrapping wheel;

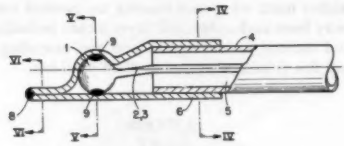
(f) means mounted upon the support frame for rotating the support member, operable independently of the drive means for the wrapping wheel and carriage, at times selected by a user; and

(g) a driving connection from the support-member-rotating means, adapted for imparting rotational movement to the support member responsive to each advancement of the ratchet by the pawl, said driving connection being adapted to rotate the support bar through an angular distance less than 360° upon each one-step advancement of the ratchet, whereby to present, in sequence, different angularly spaced sides of the core element to a user to permit the user to apply facings to said sides of the core element while it is being fed through the wrapping wheel.

4,277,886
METHOD FOR MANUFACTURING AN ENCAPSULATED PROBE ON SHEATHED THERMOCOUPLES

Heinrich F. Bauer, Eichenau, and Ernst Feitzelmayer, Munich, both of Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union München GmbH, Fed. Rep. of Germany

Filed Oct. 31, 1979, Ser. No. 89,894
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1978, 2847296
Int. Cl.³ H01R *43/02*
U.S. Cl. 29—860 11 Claims



1. In a method for manufacturing an encapsulated probe on sheathed thermocouples including thermocouple wires embedded in an external metal sheath, an insulating material encasing said wires, and a bead is formed by electrically or autogeneously processing the extreme portions of the thermocouple wires projecting from the metal sheath, the improvement comprising:

(a) positioning a thin-walled sleeve of a material similar to that of the metal sheath for about one-half over the bead and one-half over the metal sheath;

(b) pressing said sleeve onto the bead and the metal sheath so as to form an omega-shaped sleeve section and with the contour of the bead remaining to be at least visually apparent in the outer contour of the sleeve;

(c) squeezing the sleeve end remote from the metal sheath and projecting beyond the bead together around the contour of the bead into a generally duck's foot configuration;

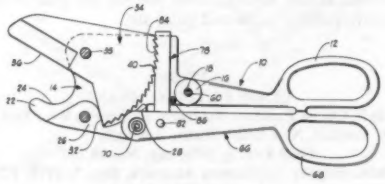
(d) weld sealing the remaining frontal gap at the pinched sleeve end;

(e) welding or soldering the sleeve to the sheath at its face immediately adjacent the metal sheath to form a tight seal wherein the solder is a silver or high-temperature nickel solder selected in conformance with the particular operating temperature of the thermocouple.

4,277,887
CONDUIT CUTTING APPARATUS

Robert R. Rady, Strongsville, Ohio, assignor to Indian Head Inc., New York, N.Y.

Filed May 10, 1979, Ser. No. 37,692
Int. Cl.³ B26B *13/00*
U.S. Cl. 30—92 13 Claims



1. A conduit cutting apparatus comprising:

a first handle;

a conduit-receiving jaw at one end of said first handle;

a shearing blade pivotally mounted on said first handle at a location for pivoting toward and away from said conduit-receiving jaw, said blade having a plurality of ratchet teeth along one edge thereof;

a second handle pivotally connected to said jaw;

an elongated toothed pawl bar having pawl teeth adjacent one end thereof and having a second end pivotally connected to said second handle, said pawl bar having a slot formed therein at a location adjacent said second end, said slot being angled with respect to the longitudinal axis of said pawl bar;

a fulcrum pin secured to said first handle and bearing guidingly against said pawl bar; and

lever means cooperating with said pawl bar and said second handle for pivoting said toothed pawl bar on said fulcrum pin to engage and disengage sand pawl teeth and said ratchet teeth when said handles are pivoted toward and away from each other, said lever means including a lever stud secured to said second arm and extending through said slot in said elongated toothed pawl bar.

4,277,888

KNIFE

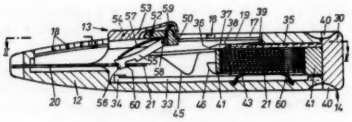
Stephan L. Szabo, Peteracherstrasse 2, CH-8126 Zumikon, Switzerland

Filed May 21, 1980, Ser. No. 151,871

Claims priority, application Switzerland, May 25, 1979, 4875/79

Int. Cl.³ B26B *29/00*

U.S. Cl. 30—162 **12 Claims**



1. A knife comprising a hollow knife handle, a guide slit in one end of the knife handle, a blade pusher advanceable and retractable relative to the knife-handle and arrestable in detent positions defined in the knife handle, a receptacle in the knife handle for receiving a blade magazine containing a stack of blades, a blade-changing device reciprocably movable relative to the blade magazine receptacle into and out of the knife handle, the said blade-changing device having an end projecting out from the knife handle and having its own handle for effecting its reciprocating movement, has first and second entraining members forming part of the blade-changing device and extending along a respective side of the blade magazine receptacle, the first entraining member being effective in use to retract a used blade from the said guide slit into the blade magazine while the second entraining member being effective to advance a new blade from the blade magazine to a predetermined position, said blade pusher being effective to engage said new blade at said predetermined position and push it into an operative position in the said guide slit.

4,277,889

GLASS CUTTING MEANS

Edwin T. Oberg, Padstow, Australia, assignor to West End Glass Co. Limited, New South Wales, Australia

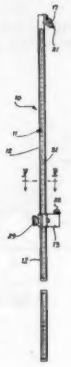
Filed Dec. 3, 1979, Ser. No. 99,737

Claims priority, application Australia, Dec. 7, 1978, PD7044

Int. Cl.³ C03B *33/10*

U.S. Cl. 30—164.95 **6 Claims**

1. A glass cutting device for flat glass comprising a glass cutting head; a guiding frame including a first arm and a second arm which are disposed transversely of one another, said cutting head being slidably positioned along said first arm having a longitudinal axis; and a plurality of rotary rollers having axes of rotation and disposed along said second arm in a spaced relationship, said axes of rotation of said rollers being disposed at an angle of 15° to 75° to said longitudinal axis, said rollers being adapted to engage with an edge of a sheet of glass



to be cut when said cutting head engages with the face of the glass sheet.

4,277,890

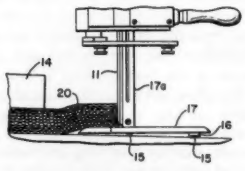
DEVICE FOR CUTTING MULTIPLE PLIES OF MATERIAL

Lawrence A. Portnoff, 818 Olive St. #22, St. Louis, Mo. 63101

Continuation-in-part of Ser. No. 891,631, Mar. 30, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,912

Int. Cl.³ B26B *7/00*

U.S. Cl. 30—273 **4 Claims**



1. A device for cutting multiple plies of cloth having extended substantially flat surfaces; said devise comprising a base for being placed on a substantially horizontal surface;

a column attached to said base,

means for oscillating a knife for cutting said cloth, said oscillating means being attached to said column;

a knife having an edge for cutting said cloth attached to said oscillating means; and means for inclining said edge of said knife with respect to a vertical axis with respect to said substantially horizontal surface at such an angle whereby said knife edge, in operation, cuts the said multiple plies of cloth at an angle of substantially 90 degrees to the extended surface of each ply.

4,277,891

LENS TAPE CUTTER

Harold R. Dick, West Brookfield, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jun. 13, 1980, Ser. No. 159,316

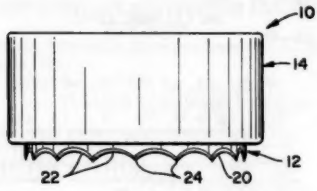
Int. Cl.³ B26B *3/00*

U.S. Cl. 30—316 **8 Claims**

1. A tape cutter for ophthalmic lenses comprising an annular blade having opposite internal and external sides of substantial

width, a sharpened serrated cutting edges and an opposite blunt mounting edge;

an annular internally recessed holder having a circular slot in said recess for receiving said mounting edge of said



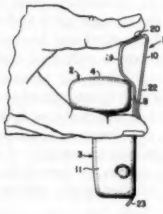
blade, said blade being seated in said slot with said cutting edge and a major portion of said internal side thereof exposed, the major portion of width of said external side of said blade resting against said holder.

4,277,892

GOLF TEE AWL AND AWL RETAINING SHEATH

Harold E. Rushforth, 1918 Monument Rd., NW., Canton, Ohio 44709

Filed Jan. 25, 1980, Ser. No. 115,398
Int. Cl.³ B26F *1/00*
U.S. Cl. 30—368 **6 Claims**



4. The combination of a golf tee awl for making holes in the ground for inserting golf tees and a sheath comprising:

(A) an awl having;

(1) a handle, and

(2) a shank having one end connected to the handle and the opposite end being pointed for insertion into the ground, and

(B) a sheath comprising;

(1) an elongated clip for attachment to the belt of a person using the awl,

(2) an elongated awl receiving member fixedly attached to the clip in parallel alignment therewith,

(3) said awl receiving member having an axial receptacle therein for receiving the shank, and

(4) an outwardly extending awl retaining means on the clip engaging the handle of the awl to releasably retain the awl in the sheath,

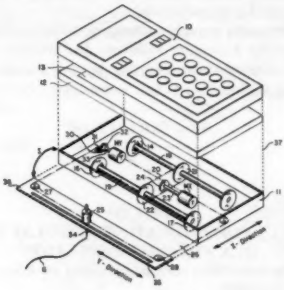
(5) said awl retaining means having a relatively flat portion inclined at an angle with respect to the axis of the receptacle, against which pressure may be applied by the user's thumb to move the awl retaining means out of engagement with the handle portion to permit withdrawal of the awl from the sheath by simultaneously pulling upwardly on the handle.

4,277,893

DRAWING INSTRUMENTS

Christian Munther, In den Schliermatten 6, 7813 Staufen, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,570
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809480
Int. Cl.³ B43L *13/00*
U.S. Cl. 33—18 R **13 Claims**



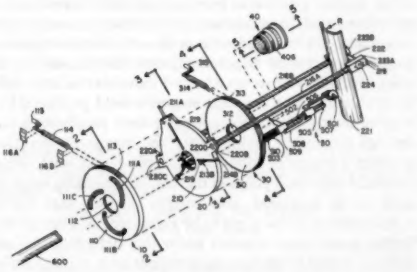
1. A drawing instrument comprising a movable base, transport means on said base, transport drive means for driving said transport means over a sheet, scribing means on said base, scribe driving means for moving said scribing means on said base, control means for controlling selectively said transport drive means and said scribe drive means, an electronic calculator and connection means between said electronic calculator and said control means, said control means and said electronic calculator as well as said connection means being arranged on and moving with said base, and a current supply for said drawing instrument on said base, whereby said instrument is self contained and is a unitary independent mechanism independent of external controls.

4,277,894

PIPE JOINT INTERSECTION CONTOUR SCRIBER

Lance B. Duhe, Box 753 K - 171 E. 17th St., Reserve, La. 70084

Filed Mar. 22, 1979, Ser. No. 22,856
Int. Cl.³ B43L *13/10*
U.S. Cl. 33—21 C **10 Claims**



1. A pipe joint intersection contour scriber comprising:

(a) a replaceable and adjustable template unit;

(b) a circular plate fixedly attached to the template unit and having a central hole formed therein and further having clamping means positioned within the hole and carried by the circular plate for clamping to the pipe to be scribed;

(c) a first rotatable gear unit having a central hole formed therein through which the pipe to be scribed is positioned; the unit being connected to and positioned on one side of

the circular plate and having first means associated therewith for rotatably positioning the first gear unit and the circular plate at a desired position;

(d) a second rotatable gear unit having a central hole formed therein through which the pipe to be scribed is positioned; the unit being positioned on the other side of the circular plate and having second means associated therewith for rotatably positioning the second gear unit;

(e) a collar unit positioned over the pipe to be scribed and through the central holes on the circular plate and the first and second gear units; and

(f) a scriber unit movably attached to the second gear unit and having a circular follower disc thereon for moving over the template and further having a scriber point for scribing the pipe.

4,277,895

APPARATUS FOR INDICATING ANGULAR POSITION IN A VERTICAL DIRECTION

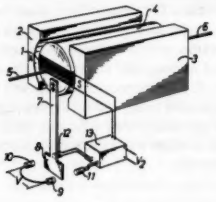
Klas R. Wiklund, Täby, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed May 8, 1979, Ser. No. 37,105

Claims priority, application Sweden, May 31, 1978, 7806294

Int. Cl.³ G01C *9/06;* **G01P** *15/08*

U.S. Cl. 33—366 **14 Claims**



1. An accelerometer for use in vertical angle measurements, said accelerometer comprising a pendulum which is rotatable about an axis and which includes a weight at the free end thereof, rotable means for mounting said pendulum for rotation about said axis, and a control means for rotating the pendulum to the angular position to be measured with respect to a vertical reference of the pendulum, said rotatable means comprising a movable coil mounted on a core and rotatable relative to a magnet arrangement disposed adjacent thereto, said pendulum being mechanically secured to said movable coil and said core being rotatable in a constant magnetic field produced by said magnet arrangement, said control means supplying a current through the coil of such polarity and magnitude that the coil provides a degree of rotation of the pendulum, with respect to a vertical reference position thereof, substantially equal to the angle to be measured, said current through said coil being representative of the angle to be measured, said accelerometer further comprising detector means for detecting the angular position of the pendulum with respect to a vertical reference position, converter means connected to the output of said detector means for producing a digital electrical signal in accordance with the output of said detector means, and a calculating means, including a correcting means having stored correction values corresponding to predetermined digital signal values, for receiving said digital electrical signals and for producing an output directly related to the true angular value to be measured based on the signals from the converter means and the corresponding value stored by the correcting means.

4,277,896

MECHANISM FOR CONTROLLING THE DISPLACEMENT OF A STRAIGHT EDGE ON A DRAWING BOARD

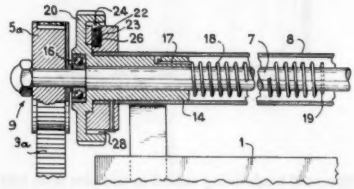
Pierre Denise, 6 Rue de la Vallee, Saint-Nicolas D'Acy, 60302 Senlis, France

Filed Sep. 13, 1979, Ser. No. 75,535

Claims priority, application France, Sep. 19, 1978, 78 26807; Aug. 21, 1979, 79 21053

Int. Cl.³ B43L *13/02*

U.S. Cl. 33—443 **19 Claims**



1. A mechanism in combination with a drawing board which has two opposed sides and for controlling the displacement of a straight-edge while maintaining the straight-edge parallel to itself on the drawing board, said mechanism comprising a rotary shaft, support means for maintaining the shaft parallel to the straight-edge, two pulleys respectively carried by the shaft adjacent opposed ends of the shaft, two guide means respectively mounted alongside the two opposed sides of the board, each guide means being cooperative with a respective one of said pulleys, one of two elements consisting of the straight-edge and the board being connected to move in translation with one of the pulleys and the other of said elements being connected to move in translation with the guide means, a device for balancing the straight-edge and comprising a torsion spring wound around the shaft and having a first end portion which is connected to rotate with said shaft and a second end portion, means for regulating the tension of the spring and comprising a sleeve which is interposed between the shaft and the support means and to which sleeve is fixed said second end portion of the spring, the elements consisting of the sleeve and the shaft and the elements consisting of the sleeve and the support means being relatively rotatable, and withdrawable means for releasably rendering the sleeve rigid with the support means.

4,277,897

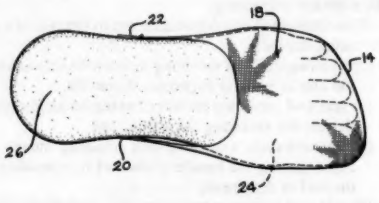
DANCE/GYMNASTIC FOOTLET

Betty O'Connell, 2122 White Chapel, Toledo, Ohio 43614

Filed Oct. 1, 1979, Ser. No. 80,386

Int. Cl.³ A43B *3/00, 3/18*

U.S. Cl. 36—106 **2 Claims**



1. A footlet for gymnasts, dancers and the like for providing the wearer with a limited support surface having a coefficient of friction less than that of the wearer's foot and determined by the material of said footlet in the support area thereof, said footlet including a toe section adapted to fit over the bare foot of the wearer having a bottom portion and a top portion joined

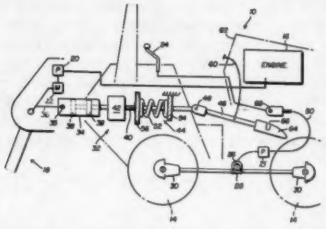
at their forward and lateral edges to form a pocket for receiving and generally conforming to the forward end of the wearer's foot with said bottom portion covering only the ball area and toes on the bottom of the foot to define said support surface, and a securing strap extending rearwardly around the heel of the wearer.

4,277,898

HYDRAULIC CONTROL SYSTEM FOR EXCAVATING MACHINE

James S. Flippin, Clearwater, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 26, 1979, Ser. No. 106,794
Int. Cl.³ A01B *67/00*; E02F *5/06*
U.S. Cl. 37—86 **1 Claim**



1. In a hydrostatically operated earth-working machine having separate hydraulic circuits, one of said hydraulic circuits powering a ground drive system for said machine and another hydraulic circuit powering an earth-working implement which is attached to said machine, the improvement comprising:

a hydraulic control system for automatically adjusting the travel speed of said machine in response to load conditions encountered by said attached earth-working implement, said hydraulic control system including a control piston-cylinder which is mounted to said machine, said control piston-cylinder being hydraulically connected to said implement hydraulic circuit at its piston end, said piston including an elongated piston rod;

an adjustable spring mechanism being mounted to said machine outside said control cylinder, said elongated piston rod passing through said spring mechanism and being linearly movable therein, said spring mechanism including a coil spring, said piston rod passing through said coil spring and being linearly movable therein, one end of said coil spring being fixed to said machine and the other end of said spring bearing against an adjustable disk which is threadedly mounted to said piston rod;

a control link pivotally mounted to the end of said piston rod opposite said piston;

cable control means mounted to said machine, one end of said cable control means being connected to a ground drive hydraulic pump and the other end of said cable control means being mounted to said machine adjacent said pivotal control link, said ground drive pump being hydraulically connected to said ground drive circuit;

said spring mechanism being connected to said piston rod and reacting against said piston to keep said piston retracted when there is no pressure in said implement hydraulic circuit, the presence of pressure in said implement circuit causing said piston to extend against the resistance of said spring mechanism;

said piston being extendable a pre-determined distance due to increased hydraulic pressure in said implement circuit when said earth-working implement is under load, means for selectively locking said control link into an engaged position with said cable control means when said piston has been extended said pre-determined distance; and

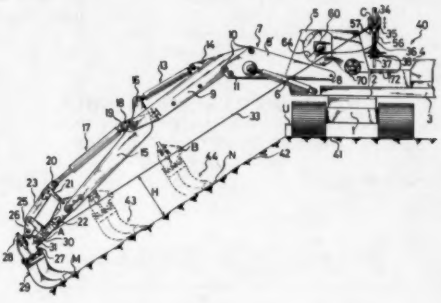
changes in pressure in the implement hydraulic circuit due to increased and decreased load on said implement causing corresponding linear shifting movement of said piston, said shifting movement of said piston being transmitted by said control link in its engaged position to said ground control pump for automatically adjusting the travel speed of said machine in response to the load being encountered by said implement.

4,277,899

EXCAVATING MACHINE WITH POSITION INDICATION OF ITS WORK IMPLEMENT

Wilfried Güthoff, Witten-Annen, Fed. Rep. of Germany, assignor to Friedrich Wilh. Schwing GmbH, Herne, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 98,825
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1978, 2851942
Int. Cl.³ E02F *5/02*
U.S. Cl. 37—103 **10 Claims**



1. An excavating machine with position indication of its preferably parallel guided work implement formed, for example, as a back hoe, that by means of a pivoting drive is movable about a pivot point on a dipper stick, said dipper stick being rotatably fastened on a preferably multi-part boom articulated on the upper part of the excavating machine with a further pivoting drive, characterized in that for the position indication an indicator (**64**) is provided, that is controlled by a guide rod **33**, that represents a connection between the swivel joint (**31**) of the work implement (**29**) and a parallel axis base swivel joint (**34**) on the pivotable excavating machine upper part (**3**) and that the position indication is calibratable on the indicator scale for inclination of the excavating machine in the linkage plane and for different distances (U) of the excavating machine from the work plane (**42**) through position adjustment of the axis parallel swivel joint (**34**) on the upper part (**3**) of the excavating machine.

4,277,900

IRON STEAM CHAMBER CONSTRUCTION

Harold W. Gowdy, Asheboro, N.C., assignor to General Electric Company, New York, N.Y.

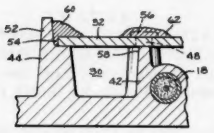
Filed Apr. 4, 1980, Ser. No. 137,122
Int. Cl.³ D06F *75/06*
U.S. Cl. 38—77.83 **6 Claims**

1. In a steam iron with a handle, water tank, and steam generating soleplate with ports and continuous vertical wall enclosing and spaced from an elongated heating element, steam directing ribs within said wall and a coverplate secured to upstanding bosses to form a steam generating and distributing chamber an improvement in said chamber comprising,

said bosses disposed along but spaced inwardly of said wall forming a straight passage along said wall,

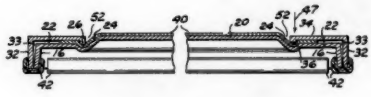
a continuous lip along the wall upper outer edge forming a cup-like niche for the coverplate,

said lip extending above the coverplate, and
a high temperature adhesive sealant along and covering the coverplate periphery at said lip,



whereby the coverplate is anchored to the soleplate at said lip and said inward bosses entirely external to the generating and distributing chamber.

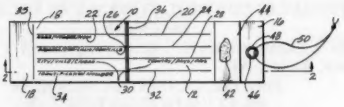
4,277,901
WATERCOLOR PAPER STRETCHER
Hugh M. Williams, 34 NE. 37, Oklahoma City, Okla. 73105
Filed Mar. 26, 1979, Ser. No. 23,820
Int. Cl.³ D05C *1/04*
U.S. Cl. 38—102.2 **6 Claims**



1. A watercolor paper stretcher, comprising:
a one-piece box-like downwardly open sheet material frame having side and end walls joined by a generally horizontal top wall having an upper surface,
said top wall having an elevated central planar portion lying in a plane spaced above the remaining marginal edge portions of said upper surface a distance at least equal to the thickness of the top wall for receiving a sheet of watercolor paper when superposed thereon with its marginal edge portions projecting beyond the perimeter of the elevated portion; and,
sheet material clamp means surrounding said frame elevated portion for impinging the watercolor paper against said upper surface,
said clamp means including a one-piece open clamp frame having side and end walls closely surrounding said frame side and end walls and having an inwardly projecting flange at its upper limit overlying said marginal edge portions of said upper surface in a plane below the plane of said elevated portion.

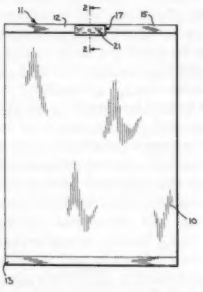
4,277,902
BAGGAGE IDENTIFICATION TAG
Salvatore J. Miniaci, Bronx, and James O. Christiansen, Massapequa Park, both of N.Y., assignors to Avery International Corporation, San Marino, Calif.
Filed Jan. 19, 1979, Ser. No. 4,942
Int. Cl.³ A44C *3/00*
U.S. Cl. 40—2 R **17 Claims**

1. A baggage identification tag comprising:
a paper-like substrate having a first face and an opposite second face;
visual indicia on the first face of the paper-like substrate adjacent a write-in space of said first face having a surface capable of receiving hand-written information from a pencil or pen, such visual indicia including words that indicate passenger name and address information is to be written in said write-in space;
the first face of the substrate having first and second margins on opposite sides of the visual indicia and said write-in space;
adhesive means on the first margin facing away from the first face of the substrate; and



a score line extending across the paper-like substrate between the first and second margins for facilitating folding of the substrate so the second margin contacts the adhesive means on the first margin for obscuring and sealing the visual indicia and the hand-written information provided in said write-in space, inside the folded substrate, the adhesive means permitting the folded substrate to be unsealed for exposing said visual indicia and the hand-written information.

4,277,903
FRAMING AND HANGING ASSEMBLY FOR A SHEET MATERIAL OBJECT
Eugene A. Crossot, 1829 E. Lake Bluff Blvd., Milwaukee, Wis. 53211
Filed Dec. 8, 1978, Ser. No. 967,622
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—152.1 **2 Claims**



1. In an assembly for at least partially framing and thereafter hanging a sheet material object for wall display, a framing member for engaging the upper edge of the object, said framing member comprising a U-section member having opposed forwardly and rearwardly disposed yieldable fingers biased into abutting relation to receive, grasp and retain said object therebetween, and a clip comprising a U-section member having opposed forwardly and rearwardly disposed yieldable fingers biased into abutting relation and having a cross section generally dimensionally identical to that of the framing member, said U-section clip member being oppositely oriented from the U-section framing member such that upon assembly the rearwardly disposed finger of the framing member is received and retained between the fingers of the clip and the forwardly disposed finger of the clip is received and retained between the fingers of the framing member, said forwardly disposed finger of the clip further serving to enhance the retaining pressure of the framing member on the sheet material object, said clip being slidable longitudinally relative to said framing member to provide for centering of the clip relative to the framed

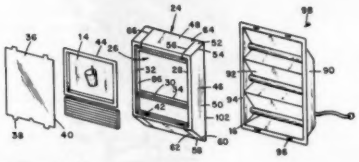
object and including means for supporting the framed object from hanger means on the display wall.

4,277,904

BACK LIGHTED SIGN FRAME

Fred W. Leuthesser, Knoxville, Tenn., assignor to Benco Industries, Inc., Knoxville, Tenn.

Filed Nov. 14, 1979, Ser. No. 93,991
Int. Cl.³ G09F *13/4*
U.S. Cl. 40—564 **5 Claims**



1. A sign comprising

(a) a frame having a rectangular front wall and side walls peripherally joined to the front wall, the side walls extending rearwardly from the front wall to define a rearwardly opening cavity,

(b) means defining an aperture in said front wall including an interior peripheral edge,

(c) ledge means joined to said front wall around said interior peripheral edge and extending rearwardly and inwardly from said interior peripheral edge, and

(d) display panel means having a shape congruent with said aperture defined in said front wall and sized for reception within said aperture and for support by said ledge means,

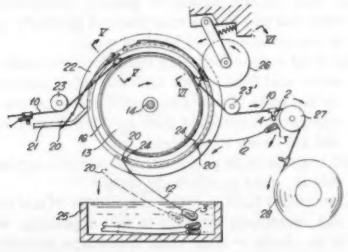
(e) said frame comprising a pair of side members, each of said side members including an elongated central section, a first end section extending perpendicularly from one end of said central section and a second end section extcnding perpendicularly from the other end of said central section, said first and second end sections of each said side member being parallel to one another, and means for linearly attaching each first end section of each of said pair of side members to the second end section of the other said pair of side members comprising tab means extending longitudinally from at least one of said end sections of one of said pair of side members for frictional engagement with an end section of the other of said side members.

4,277,905

APPARATUS FOR DETACHING RELEASABLE SNOODS FROM A FISHING LINE

Per Huse, Haslum, Norway, assignor to O. Mustad & Son A/S, Oslo, Norway

Filed Nov. 6, 1979, Ser. No. 91,865
Claims priority, application Norway, Nov. 17, 1978, 783871
Int. Cl.³ A01K *91/00*
U.S. Cl. 43—4 **10 Claims**



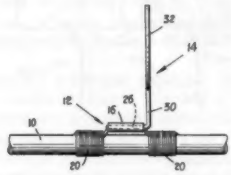
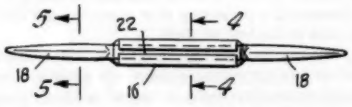
1. An apparatus for detaching releasable snoods from a fishing line while at the same time unwinding the snoods from the line, if required, and for depositing the snoods in a storage box continuously as the line is hauled in by means of, for example, a winch positioned in front of the apparatus, said apparatus having or being associated with a hook handling means which orients and guides the hooks being drawn along by the snoods, via hook guides, to one or the other side of the circumference of a wheel provided with a peripheral groove for receiving the line, which is drawn over the wheel by a suitable pulling device and sets the wheel in rotation, said line being provided with releasable snoods whose fastening means comprises a peg, rotatably attached to the line and having small stops in the middle section of the peg, and a radially resilient ring attached to one end of the snood and detachably retained on the peg inward of said stops, the apparatus also including a peg release disk disposed on the side of the wheel from which the line is discharged, said disk lying resiliently against the periphery of the wheel for releasing the said pegs from the said resilient rings, the pegs being pushed partially down through the rings by said peg release disk and down into the said groove in the wheel while the rings remain in contact with the sides of the groove, whereby the stops are guided from a securing position on one side of the ring into a release position on the other side of the ring, characterized by fixed hook guides disposed at each side of the wheel for receiving the said hooks from the said guides which guide the hooks while they are still being pulled along by the snoods carrying the hooks over the wheel to a point on the wheel circumference at which the hooks guides change direction and prevent further forward movement of the hooks, whereby the rings on the snoods are pulled off the pegs during a possible simultaneous unwinding of the snoods from the line owing to the tension produced in the snoods, and the hooks slide down off the ends of the hook guides and are deposited in a storage box.

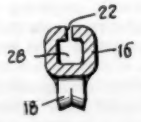
4,277,906

FISH LINE GUIDE ASSEMBLY

Pierre Nelli, 146 Main St., Westport, Conn. 06880

Filed Feb. 11, 1980, Ser. No. 120,212
Int. Cl.³ A01K *87/04*
U.S. Cl. 43—24 **5 Claims**





1. A fish-line guide assembly having a removable wire loop

member, said assembly being adapted for attachment to a fish rod to confine and guide the fish line along the same and comprising in combination:

(a) a metal mounting clip having an elongate body portion and a pair of attachment tabs integral with the body portion and extending in opposite directions from the ends thereof, said tabs being adapted for placement against the fish rod with the tabs parallel to and overlying the rod for securement thereto by wrappings,

(b) said clip body portion being resilient, essentially tubular, having a cross-sectional configuration adapted to closely confine a single thickness, rod-like member, and having a slit extending between its ends, enabling it to spread apart laterally within limits,

(c) a one-piece wire loop member having an integral supporting rod-like base constituted of a solid, single-thickness wire tine which is of non-circular cross section and is adapted to be frictionally received in the body portion of the mounting clip,

(d) said body portion defining a passage for receiving the single-thickness wire tine of the loop member and at said passage conforming to the non-circular cross section of said tine,

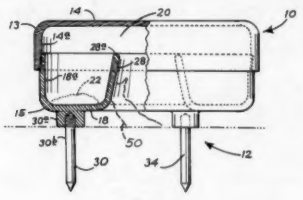
(e) said body portion being adapted to spread slightly and to frictionally grip the inserted tine of the loop member, thereby to hold the loop member against inadvertent removal and also against lateral movement while in its supported position.

4,277,907

SLUG TRAP

Lorraine D. Ernest, 945 S. 2nd, Coos Bay, Oreg. 97420

Filed Apr. 4, 1980, Ser. No. 137,136
Int. Cl.[3] A01M *1/20*
U.S. Cl. 43—131 **5 Claims**



1. A slug trap comprising:

a hollow container body formed of a bottom shell having a bottom and an upwardly projecting skirt and a top shell detachably secured to the bottom shell including a top and a downwardly projecting skirt overlying the exterior of the skirt in the bottom shell;

a slug entering aperture formed in the bottom of said bottom shell and an upstanding wall bounding said aperture projecting upwardly into the interior of said body to approximately the level of the top of said skirt in the bottom shell where the wall bounds a void communicating with the body interior, said bottom shell in a region bounded by said bottom, upwardly projecting skirt, and said wall providing an annular region for the deposit of bait with the top shell removed so as to provide access to said region, and

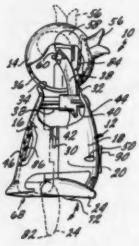
means joined to the body for supporting said body with the bottom thereof spaced above ground level, said means comprising elongate pegs distributed about said aperture and joined to and projecting downwardly from said bottom shell.

4,277,908

FLOATING TOY

Teruo Nikaido, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,434
Claims priority, application Japan, Jun. 19, 1979, 54-83776
Int. Cl.[3] A63H *23/10*
U.S. Cl. 46—92 **6 Claims**



1. A toy capable of floating on and propelling itself through a body of water which comprises:

a generally streamlined body section including an outside surface generally divisible into at least a back area, a front area and left and right side areas;

said body including a neck region on one end of said body, said neck region including an opening at the end of said body wherein said neck region is located;

a head section pivotally mounted to said body adjacent to said opening in said neck area and capable of pivoting with respect to said body between a first position and a second position;

said head section including at least one distinguishing feature located on said head section at a point that is capable of moving through an arc that is viewable from at least one of the left or right sides of said body, said arc lying on a plane, said plane cutting through both said back and front areas of said body and when viewed from at least one of the left or right sides of said body and as measured along a curved line which is an extension of both ends of said arc, one end of said arc being located closer to said back area and the other end of said arc being located closer to said front area, said distinguishing feature located at the end of said arc closer to said back area when said head is in said first position and located at the end of said arc closer to said front area when said head is in said second position;

said body section capable of floating on said body of water such that said back area is oriented upwardly with respect to the surface of said body of water;

said head section including head flotation means positioned within said head section such that when said toy is floating on said body of water said head section pivots to said first position to locate said distinguishing feature at the end of said arc closer to said back area;

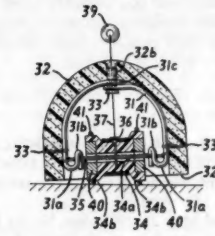
said body including at least one movable appendage movably attached to said body section;

motor means located within the interior of said body section and operatively attached to said appendage with respect to said body, said movable appendage propelling said toy through said body of water when said movable appendage moves with respect to said body.

4,277,909
TOY WITH STAGGERING MOTION

Richard C. Rainwater, Christian IV Gate 3, Stavanger, Norway

Continuation-in-part of Ser. No. 935,765, Aug. 22, 1978, abandoned. This application Sep. 6, 1979, Ser. No. 72,940
Claims priority, application France, May 16, 1978, 78 15003
Int. Cl.³ A63H *11/10*
U.S. Cl. 46—103 8 Claims

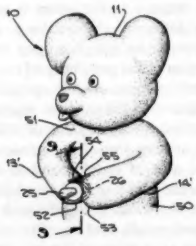


1. A toy comprising a vertically disposed, transverse, downwardly opening inverted U-shaped rigid frame having an eye in its central upper portion, a hollow body of soft cellular plastic material mounted on said frame and having a hole registering with said eye, said body being of inverted U-shaped transverse cross section conforming to said frame and being open at its bottom with a skirt portion extending down below said frame, said frame being disposed transversely of said body approximately midway between forward and rear ends of said body and conforming to a median transverse cross section of said body, means securing said body to said frame above the lower ends of said frame while leaving lower ends of said frame free of said body, a rubber band extending between the free lower ends of said frame, a spool having an axial bore through which said rubber band extends whereby said spool is rotatably supported by said rubber band, a string wound around said spool and extending up through said eye of said frame and registering hole in said body and a finger grip on said string above said body, whereby if said toy is held above the floor and released while the finger grip is held, the toy drops to the floor and the string in unwinding from said spool rotates said spool to wind-up said rubber band which thereupon rotates the spool in the opposite direction to propel the toy along the floor.

4,277,910
INFANT PACIFIER COMBINATION

Remi T. Kramer, 8661 Delmonico, Canoga Park, Calif. 91304

Continuation-in-part of Ser. No. 921,202, Jul. 3, 1978, Pat. No. 4,188,747. This application Nov. 13, 1979, Ser. No. 93,045
The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.
Int. Cl.³ A63H *3/00*
U.S. Cl. 46—116 5 Claims

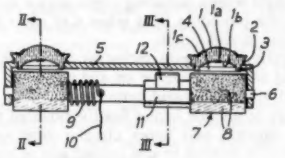


1. An infant pacifier combination in the form of a doll-like body naturally attractive to and of size for being embraced by a human infant, said combination comprising a body having appendage means, a receptacle formed in part from said appendage means, said receptacle comprising opposing parts of outer ends of said appendage means in juxtaposition when in operation, complementary mutually engageable patches on respective opposing parts adapted to engage each other in a releasable engaging relationship forming in effect a potential outwardly facing opening for the receptacle and open to the exterior, sides of said receptacle comprising the patches being adapted to act as a releasable yieldable holder, a pacifier member having a nipple-like protrusion on one side and a retainer counter-member on the opposite side, at least a part of the retainer counter-member being complementary with respect to the yieldable holder when said retainer counter-member is located within the receptacle, whereby the pacifier member is held releasably in place on the body.

4,277,911
CHANGING THE COLOR OF A DOLL'S EYES

Henri Mizoule, 2 bis rue Lecointre, Sevres, France (92310), and William Gardel, 75, rue de Versailles, Ville d'Avray, France 92410

Filed Dec. 3, 1979, Ser. No. 99,584
Claims priority, application France, Dec. 8, 1978, 78 34679
Int. Cl.³ A63H *13/00*
U.S. Cl. 46—135 R 7 Claims



1. In combination with a doll's head formed with eye openings, apparatus for changing the color of the eyes in said head comprising:

a frontal spherical segment of a simulated eyeball mounted within each of said eye openings, said eyeballs each having portions of an eye represented thereon and being of a transparent material at the portions corresponding to the irises;

screen members associated with said segments, each said screen member having a plurality of different colored areas which are selectively positionable behind its associated segment whereby said areas are visible through said iris portions to simulate irises of different colors; and

positioning means supported by said doll's head and operatively associated with said screen members to selectively position and retain one of said areas behind each of said segments.

4,277,912
GYROSCOPE-MONOCYCLE

Shou-Chung Hsien, 40 Wun-Chang Rd., Shan-Hwa Chen, Tainan Hsien, China

Filed Sep. 25, 1979, Ser. No. 78,678
Int. Cl.³ A63H *1/00*
U.S. Cl. 46—269 9 Claims

1. A flying saucer-shaped gyroscope toy comprising:

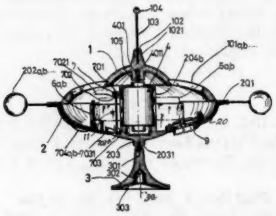
a circular dish-shaped rotor having a circular lower edge surrounding a first axis of rotation at its center and slits therein symmetrically disposed with respect to said first axis of rotation; said slits causing a buzzing sound when said rotor rotates;

a lower circular dish-shaped body having a second axis of rotation aligned with said first axis of rotation, a circular

upper edge having the same diameter as the diameter as said circular lower edge of said rotor and a point edge at its bottom surface along said second axis of rotation;

a d.c. motor mounted in said lower body along said second axis of rotation and having a drive shaft extending along said second axis of rotation and engageable with said rotor along said first axis of rotation for driving said rotor to rotate, said gyroscope being supported on its point edge by gyroscopic action;

means for vertically supporting said rotor and body for rotation about said first axis of rotation when said means is in a first orientation or a second orientation with respect



to said body, said means being rotatable with said body in said first orientation, said body rotating in relation to said means in said second orientation;

electric light means, including a light source mounted in said body, for providing light when said rotor is rotating in response to said motor;

said electric light means including a vibrating switch for turning said light source on and off when said rotor is caused to rotate by said motor; and

a plurality of satellite bodies fixedly mounted to said lower body adjacent said upper circular edge symmetrically disposed in relation to said second axis of rotation.

4,277,913

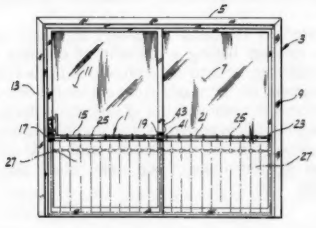
CURTAIN ROD FOR SLIDING GLASS DOOR

Ross M. Castle, 100 Castle, Florissant, Mo. 63034

Filed Sep. 19, 1979, Ser. No. 77,004

Int. Cl.³ E06B 7/00

U.S. Cl. 49—70 **14 Claims**



13. In combination, a glass door assembly in a wall comprising a frame for securement to the wall, a first glass door panel secured to the frame at a first end of the frame and a second glass door panel slideable in the frame toward and away from a closed position at a second end of the frame, and a curtain rod for the glass door assembly, said curtain rod comprising:

a first rod section;

means for mounting the first rod section on the movable door panel in position extending generally horizontally across a face of the movable door panel;

a second rod section; and

means for securing the second rod section to the frame in axial alignment with the first rod section;

said first rod section being spaced laterally from said face of the movable door panel and said second rod section being spaced laterally from a face of the secured door panel for supporting a plurality of hooks or the like, adapted to support a curtain, said rod sections having a sliding fit with respect to each other and constituting an extensible rod assembly, said rod assembly extending as the movable door panel is moved toward its closed position and retracting as the movable door panel is moved away from its closed position, said rod assembly being adapted to support a curtain extending across the faces of the secured and movable door panels in both closed and open positions of the movable door panel.

4,277,914

APPARATUS FOR GRINDING ARTICLES WITH TWO ROTATING GRINDING DISCS

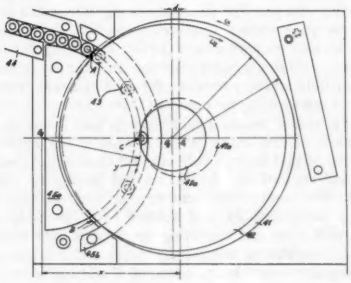
Yves-Andre Segard, Morges, Switzerland, assignor to Etablissements Sim S.A., Switzerland

Filed May 21, 1979, Ser. No. 41,108

Claims priority, application Switzerland, May 29, 1978, 5836/78; Nov. 20, 1978, 11859/78

Int. Cl.³ B24B 7/16

U.S. Cl. 51—112 **4 Claims**



1. In a grinding machine, a grinding device for grinding cylindrical articles, such as cylinders and rings, adapted to be ground on opposite end surfaces, comprising a first rotatable grinding disc, a second rotatable grinding disc, means for vertically mounting said first rotatable grinding disc and said second rotatable grinding disc in a substantially parallel spaced relationship to define a spacing adjacent faces of the discs substantially equal to the distance between the opposite end surfaces of the articles to be ground, said adjacent faces being circular, said grinding discs having unequal outside diameters, each disc having a substantially horizontal axis parallel to and disposed at a spaced distance from the horizontal axis of the other disc to define an area of overlap in respect to the adjacent faces, said spaced distance being not more than five percent of the radius of each disc, means for rotating each disc in an opposite direction relative to the other at selected speeds of rotation, means for delivering the articles to be ground to said area of overlap through an entrance apex to the spacing defined by a first overlap of the periphery of each disc relative to the other, said rotating means being operative to oppositely rotate each disc relative to the other at angular speeds which differ from each other by an amount of 1% to 5% of their values, to pass the articles from the entrance apex through a circular arc in said area of overlap and to a discharge apex from the spacing defined by a second overlap of the periphery of each disc relative to the other, and the path being variable as a function of selected speeds, said circular arc having a center lying in the common axial plane of the two discs arranged at a radial distance (x) from the axis of one disc, said radial distance being defined by the equation

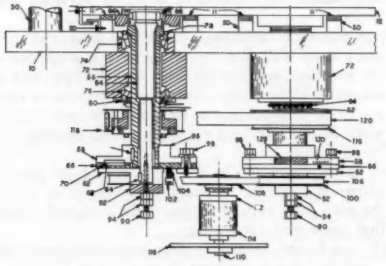
$$x = \frac{d \cdot w_2}{w_2 - w_1}$$

wherein d is the spacing between axes of the discs and w_1 and w_2 are the respective angular speeds of the discs, each disc having a central opening for supplying a cooling liquid into the spacing between said adjacent faces and wherein said circular arc intersects said common axial plane at the vicinity of the point at which the central opening of each disc overlaps relative to the other so that the articles project at this point over the edge of each central opening, and wherein said discs are arranged so that said entrance apex and said discharge apex are located on the same diametrical side of said discs.

4,277,915
APPARATUS FOR SHAPING ELECTRODES

Marten C. Hausermann, and Melvin V. Mues, both of Addison, Ill., assignors to Hausermann Abrading & Process Co., Addison, Ill.

Filed Jul. 6, 1979, Ser. No. 55,683
Int. Cl.³ B24B *19/00*
U.S. Cl. 51—157 **7 Claims**



1. An improved apparatus for forming electrical discharge machining electrodes said apparatus being of the type including a first platen, a second platen mounted in superimposed relation and adapted to be driven vertically with respect to said first platen, a die member having an abrasive surface mounted on one of said platens, a workpiece member mounted on the platen opposite the platen on which said die member is mounted in working alignment with said die member, means for applying horizontal oscillatory rotary motion to said first platen, vertical drive means for infeeding said workpiece member and said die member into contact with each other while said oscillatory rotary motion is being applied to thereby abrasively shape said workpiece member to the form of said die member, and wherein said improvement comprises

a plurality of spindles each having a longitudinal centerline axis of rotation and an axial aperture offset by a preselected distance from said axis of rotation;

a like plurality of crankshafts each rotatably disposed in said axial apertures in said plurality of spindles and having an upper eccentric portion coupled to said first platen;

means for locking each said crankshaft in rotation to its respective spindle such that upper eccentric portion of each said crankshaft is offset from said longitudinal centerline axis of rotation of its respective spindle by substantially the same predetermined distance;

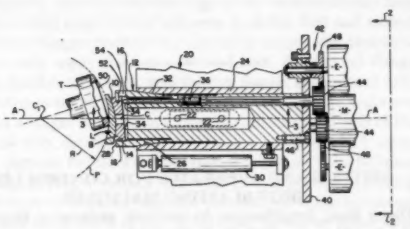
means for driving said plurality of spindles in synchronous rotation about the longitudinal centerline axes thereof to thereby apply horizontal oscillatory rotation motion to said first platen; and

means for simultaneously adjusting all said crankshafts in rotation relative to their respective spindles.

4,277,916
LENS CHUCKING APPARATUS

Rato R. Buhler, Dudley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Mar. 14, 1980, Ser. No. 130,286
Int. Cl.³ B24B *13/00*
U.S. Cl. 51—217 L **7 Claims**



1. In lens surfacing apparatus, the combination comprising:

a lens block having one side to which a lens may be attached and a spherically contoured edge;

a collet for chucking said block, said collet having a plurality of laterally outwardly biased spring fingers adjacent a work-receiving end thereof, said fingers collectively having an internal spherical seat adjacent said work-receiving end of said collet for intimately receiving said edge of said block when placed therein, said spherical edge of said block and sphericity of said seat being of substantially corresponding curvatures permitting universal tilting adjustment of said block relative to a central axis of said collet;

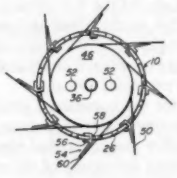
means for selectively effecting an outwardly directed opening and inwardly directed closing of said spring fingers for respectively seating said block in said seat and ultimately clamping same therein; and

stop means comprising elongated adjustable elements internally of said working end of said collet for establishing a fixed angular adjustment of said block in said collet seat by engagement with a side of said block oppositely of said lens attachment side.

4,277,917
SANDING, BUFFING AND/OR POLISHING WHEEL

Christopher A. Ali, and Frank F. Ali, both of 2973 Pascal Dr., Fairborn, Ohio 45324

Filed Apr. 19, 1979, Ser. No. 31,382
Int. Cl.³ B24B *9/02*
U.S. Cl. 51—335 **2 Claims**



1. A sanding, polishing and/or buffing wheel comprising a housing for a spool of strips of abrasively surfaced material, said housing having a plurality of pairs of longitudinally extending circumferentially spaced slots one slot of each pair acommodating the projection therethrough of one end of a strip of the abrasively surfaced material which is anchored to said spool which is applied within and normally fixed for rotation with said housing, the other slot of each of said pairs being a trailing slot with reference to said one thereof considering the direction of rotation of the housing, said trailing slot

accommodating, in each case, a firm but resilient element slip fit therein to provide a backing device for the projected end of the strip of adhesively surfaced material which is most adjacent thereto and immediately in advance thereof, said resilient element including a channel shaped portion serving as its base, which is slip fit into a trailing slot to fit about the trailing portion of the housing wall at the trailing edge of said slot.

4,277,918

METHOD AND APPARATUS FOR CONTROLLING SHOT-BLASTING MACHINES

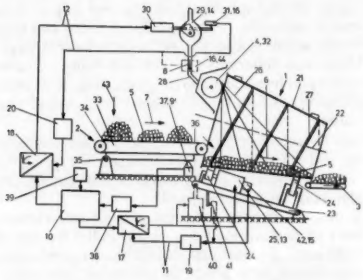
Dieter Bass, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Switzerland

Filed Apr. 17, 1979, Ser. No. 30,824

Claims priority, application Switzerland, Apr. 21, 1978, 4319/78

Int. Cl.³ B24C *3/30, 7/00, 1/00*

U.S. Cl. 51—415 **22 Claims**



1. A process for the regulation of continuously operating shot-blasting machines to which the supplied quantity of workpieces to be processed varies with time, wherein the machines are of the type having a blasting chamber and centrifugal impellers for impelling a blasting medium against the workpieces, comprising the steps of:

determining the quantity of workpieces to be shot-blasted per unit time, and

controlling at least one of the rate of passage of the workpieces through the machine and the supply of blasting medium to the impellers as a function of the determined workpiece quantity to obtain a substantially uniform blasting effect on the processed pieces.

10. An apparatus for the continuous processing of workpieces of the type having a rotatable drum and centrifugal blasting medium impeller means for shot blasting workpieces in the drum, and wherein the supply of the quantity of workpieces to the drum varies with time, the apparatus including

transducer means for measuring the quantity of workpieces to be blasted per unit time and for producing a signal representative of that quantity;

means coupled to the drum for controlling the rate of passage of the workpieces through the drum; and

a regulating circuit coupled to said means for controlling and responsive to the signal from said transducer means for varying the workpiece rate of passage as a function of workpiece quantity whereby a substantially uniform blasting effect on the workpieces is achieved independently of the quantity supplied.

4,277,919

CABIN CONSTRUCTION

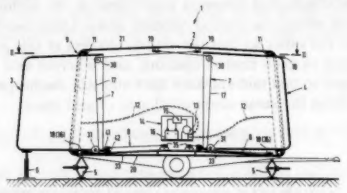
Wolfgang Artweger, and Anton Burger, both of Windischgarsten, Austria, assignors to "Wohn-Art"-Freizeitartikel Gesellschaft m.b.H., Windischgarsten, Austria

Filed Oct. 19, 1979, Ser. No. 86,686

Claims priority, application Austria, Nov. 6. 1978, 7925/78

Int. Cl.³ E04B *1/343, 1/345*

U.S. Cl. 52—2 **33 Claims**



1. A cabin construction defining an interior chamber of changeable size and comprising

(a) a main cabin having two side walls and an upper and a lower wall interconnecting the side walls, at least one end of the main cabin being open and the main cabin having a longitudinal axis extending centrally between the side walls,

(b) an extension cabin having two side walls and an upper and a lower wall interconnecting the side walls, one end of the extension cabin being open and the open end of the extension cabin being telescopingly received in the open end of the main cabin, the respective side, upper and lower walls of the main and extension cabins defining a space therebetween,

(c) a first guide means for glidably carrying and guiding the extension cabin for telescoping movement in relation to the main cabin in the direction of the longitudinal axis, the first guide means including

(1) two flexible tensile elements respectively extending in vertical planes substantially parallel to the side walls, and,

(2) a pair of superposed pulleys mounted in the vicinity of each side wall of the extension cabin near the open end thereof, each flexible tensile element being trained over a respective pair of the pulleys in zigzag arrangement,

(d) a second guide means for guiding the extension cabin parallel to the longitudinal axis, the second guide means including

(1) two flexible guide elements extending horizontally substantially parallel to the upper and lower walls, and

(2) two pairs of pulleys mounted on one of the walls of the extension cabin, the pulleys of each pair being arranged symmetrically with respect to the longitudinal axis, each flexible guide element being trained over a respective pair of the pulleys in zigzag arrangement and the two guide elements being mirror-symmetrical with respect to the longitudinal axis, and

(e) a gasket means arranged in the space and operable to engage the walls for sealing the space.

4,277,920

PORTABLE AND OPERABLE WALL SYSTEMS

Guy E. Dixon, Miami, Fla., assignor to Panelfold Doors, Inc., Miami, Fla.

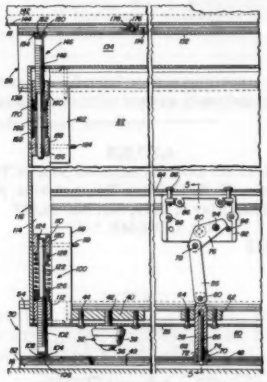
Continuation-in-part of Ser. No. 727,605, Sep. 28, 1976, Pat. No. 4,103,463. This application Feb. 18, 1977, Ser. No. 770,064

Int. Cl.³ E04B *2/74;* **E04H** *3/02*

U.S. Cl. 52—64 **7 Claims**

1. In a movable wall system extending generally vertically between a floor and ceiling and including at least one wall panel, that improvement in which the wall panel includes a fixed vertical dimension slightly less than the distance between

the floor to the ceiling, a longitudinally continuous floor engaging and seal means on the lower edge of said panel for vertical movement, means for selectively vertically extending and retracing said floor engaging means, a ceiling engaging means at the upper edge of the panel, and spring biased and guiding means connecting the ceiling engaging means with the upper edge of the panel and adjustment means for varying the position of said ceiling engaging means in relation to said spring biased means to provide an initial adjustment of the position of the ceiling engaging means to maintain a substantially constant spring force on the ceiling engaging means within the range of the adjustment means by initially adjusting



the initial position of the ceiling engaging means to a point approximate its final position when the panel is in its floor to ceiling position, said extending and retracting means including means mounted on the panel and forming the sole means for lifting the entire weight of the panel and moving the ceiling engaging means into spring biased engagement with the ceiling with the weight of the panel maintaining the seal means in sealing engagement with the floor, said floor engaging and seal means being in the form of an elongated channel-shaped member having parallel legs telescopically receiving the surfaces of the panel, and adjustable spring biasing and guiding means interconnecting the channel-shaped member and the lower edge of the panel.

4,277,921

THREE-DIMENSIONAL COMPONENTAL MODULE AT "T" MODIFIED FOR THE INDUSTRIAL PREFORMATION OF BUILDINGS

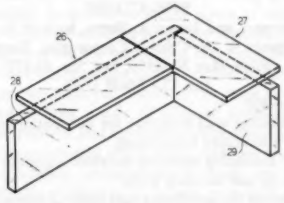
Velo D. Gianfranco, Via Velo, 14, 35014 Fontaniva (Padova), Italy

Filed Dec. 10, 1979, Ser. No. 101,705

Claims priority, application Italy, Apr. 6, 1977, 41568 A/77; Aug. 26, 1977, 41670 A/77

Int. Cl.³ E04H *9/06*

U.S. Cl. 52—79.4 **27 Claims**



1. A building enclosing room spaces comprising a multiplicity of molded precast concrete building modules defining the upright walls and the horizontal overhead ceilings of the room spaces, each of said building modules including an elongate vertical slab and an elongate horizontal slab, the vertical and horizontal slabs being cast integrally in one piece and being rigid with respect to each other, the horizontal slabs having first and second longitudinal side edges, the vertical slab of each module having an upper portion upon which the horizontal slab is supported, and the vertical slab being disposed between the first and second edges of the horizontal slab and significantly closer to the first edge of the horizontal slab than to the second edge thereof whereby to define first and second horizontal flanges respectively extending in opposite directions transversely away from the vertical slab, the second flange being significantly wider than the first flange, the vertical slabs extending vertically throughout the full height of the walls and having a height which many times exceeds the thickness of the vertical slab, the horizontal slab having a width which many times exceeds the thickness thereof, a first one of the building modules having a vertical slab with an end portion extending endwise away from the adjacent terminal end of the horizontal slab, said end portion of the vertical slab having an upper edge which underlies and supports the horizontal slab of a second one of the building modules.

4,277,922

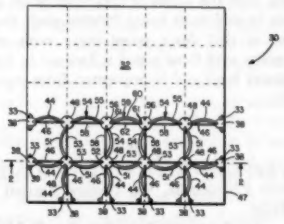
FRAME ASSEMBLY APPARATUS AND METHOD OF MAKING SAME

Jack G. McAllister, P.O. Box 22494, Robbinsdale, Minn. 55422

Continuation-in-part of Ser. No. 857,435, Dec. 5, 1977, Pat. No. 4,190,990, which is a continuation-in-part of Ser. No. 712,351, Aug. 6, 1976, abandoned, which is a division of Ser. No. 255,688, May 22, 1972, Pat. No. 3,973,370. This application Feb. 1, 1980, Ser. No. 117,774

Int. Cl.³ E04B *1/32*

U.S. Cl. 52—81 **45 Claims**

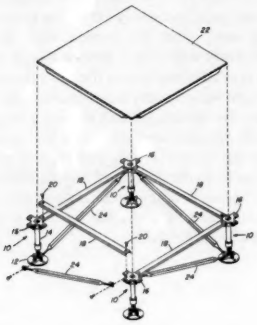


1. A frame assembly located over a surface surrounded by an outer peripheral edge comprising: a plurality of anchor means spaced along said outer peripheral edge, a plurality of strut assemblies located adjacent said surface, means pivotally connecting some of said strut assemblies to the anchor means, hub means connected to adjacent strut assemblies to form a network of strut assemblies and hub means located over the surface, each of said strut assemblies having at least one spring strut that can be biased from an elongated position to a curved contracted position, and holding means retaining the strut in said curved contracted position, said holding means being releasable whereby the spring strut moves from said contracted position to said elongated position thereby moving the frame assembly away from the surface to an erected position.

4,277,923
SUPPORT PEDESTAL ASSEMBLY FOR A RAISED FLOOR SYSTEM

Hugo E. Rebentisch, Garden City, and Ellwood Irish, Wayne, both of Mich., assignors to Unistrut Corporation, Wayne, Mich.

Filed Oct. 18, 1979, Ser. No. 86,207
Int. Cl.³ E04B *5/43*
U.S. Cl. 52—126 **12 Claims**



1. A raised floor system comprising:

at least four support pedestal assemblies, said pedestal assemblies each including

a pedestal base,

a vertical, adjustable height support column having a lower end coupled to said pedestal base, and

a pedestal head coupled to an upper end of said support column, said pedestal head including a center region having means for coupling to said support column and four arms, each having an aperture therethrough, extending outwardly from said center region, adjacent arms being at right angles; and

at least one rectangular floor panel having a substantially flat top surface, four edges, four corners each resting over the center of one of said pedestal heads, and a downwardly extending projection near each corner,

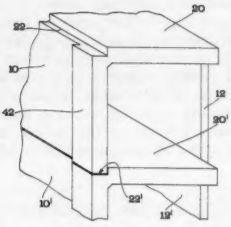
said pedestal head being aligned so that said arms form an angle with the edges of said floor panel and said apertures in said arms being located such that the projections in said floor panel mate with said apertures whereby said floor panel is located in relation to said pedestal head and is prevented from moving horizontally.

4,277,924
PREFABRICATED BURIAL CHAMBER

Ermenegildo Chimentin, Via Cesare Battisti 54, Lessolo, Turin, Italy

Filed Apr. 10, 1979, Ser. No. 28,746
Claims priority, application Italy, Apr. 12, 1978, 53173/78[U]
Int. Cl.³ E04H *13/00*
U.S. Cl. 52—136 **1 Claim**

1. A prefabricated burial chamber in the form of a structure cast integrally of reinforced concrete comprising first and second side walls of a given thickness, said side walls being interconnected to a rear wall of the same thickness and an upper wall of double thickness; an abutment step extending along each of the longitudinal edges of said upper wall and having a width corresponding to said given thickness of said first and second side walls; and a vertical pillar formed on a front edge of said first side wall, said vertical pillar having at least twice the thickness of said side walls and a width greater than said thickness, said width being defined by a front and a rear edge, said front edge of said first side wall being flush with the front edge of said upper wall, and said rear edge of said pillar being aligned with the front edge of said second side



wall, whereby superimposed or laterally adjacent structures can be quickly and easily aligned with similar structures.

4,277,925
SIMULATED LOG BUILDING STRUCTURE

C. Wayne Kinser, 87 W. Oakview Rd., Asheville, N.C. 28806

Filed May 4, 1979, Ser. No. 35,987
Int. Cl.³ E04B *1/10*
U.S. Cl. 52—233 **18 Claims**

1. In a building wall structure having outer walls and corners that simulate log-type construction comprising: at least one corner element having a plurality of adjacent wedge-shaped blocks having alternate outer surfaces in angular contact relationship to each other, the outer angular surface in one block projecting beyond the outer angular surface of its adjacent block with each adjacent block at an angle with respect to each other and having an outwardly projecting end face that has an angular top edge and a straight bottom edge, and a plurality of log facing elements spaced one from the other by a mortar joint spacer element, each of said facing elements in each outer wall abutting a side of each of said wedge-shaped blocks, and each of said mortar joint spacer elements in each outer wall abutting only alternate wedge-shaped blocks that project outwardly beyond the surface of said spacer element.

4,277,926
VENTED INSULATION SYSTEM FOR EXISTING STRUCTURE

Morton Sherman, and James A. Berry, both of St. Petersburg, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed May 30, 1979, Ser. No. 43,871
Int. Cl.³ E04B *1/70*
U.S. Cl. 52—303 **99 Claims**

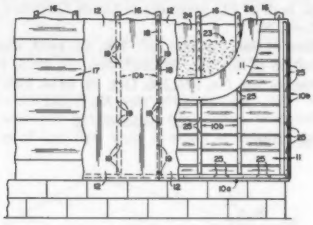
1. An insulating wall structure for installation onto an existing wall of a structure comprising

a layer of insulating material mounted adjacent the exterior surface of said existing wall,

spacing means for separating said layer of insulating material from said existing wall, and

closure means for closing off along the bottom and the side edges of the space between said separated layer of insulating material and existing wall, an opening being provided

at the upper edge of said insulating wall structure so as to provide a relief outlet for water vapor from the interface



of said existing wall and said insulating wall structure to the outside of said structure.

4,277,927

SPACER FOR THE BRICKS OF A FACING BRICKWORK TO BE PLACED IN FRONT OF AN INNER BRICKWORK

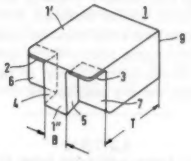
Stefan Richter, Eilswiese 8, 2000 Hamburg 65, Fed. Rep. of Germany

Filed Nov. 7, 1979, Ser. No. 91,952

Claims priority, application Fed. Rep. of Germany, May 30, 1979, 7915579[U]; Jun. 15, 1979, 7917143[U]

Int. Cl.³ E04G *21/16;* G01B *3/30*

U.S. Cl. 52—749 **10 Claims**



1. Spacer for laying bricks of a facing brickwork to be placed in front of and at a predetermined distance from a previously laid inner brickwork, said spacer comprising a unitary body having a normal use position for placing the facing brickwork in front of an upstanding inner brickwork and in the normal use position said spacer comprising a first horizontal wall including a pair of contact surfaces located in a common horizontal plane with said contact surfaces facing downwardly, a pair of vertically extending width stops each extending perpendicularly downwardly from the common plane of said contact surfaces, said width stops being in spaced relation so that the overall spacing between the surfaces of said stops facing away from one another corresponds to the normal horizontal joint width between two adjacent bricks in the same course, wall means defining at least a pair of distance stops disposed in spaced parallel relation and extending perpendicularly to said contact surfaces and to said width stops, said first wall and said width stops extending perpendicularly from one side of a common vertically extending plane and said wall means extending perpendicularly in the opposite direction from said common vertically extending plane and the spacing between said distance stops in the horizontal direction corresponding to the spacing between the facing brickwork and the inner brickwork.

4,277,928

CONTROL ARRANGEMENT, ESPECIALLY FOR APPARATUS FOR CLOSING CONTAINERS SUCH AS BOTTLES

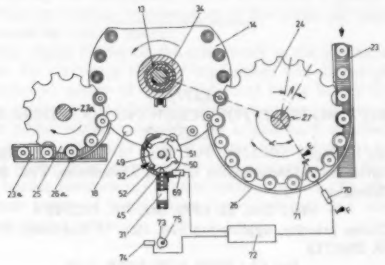
Egon Ahlers, Bad Kreuznach, Fed. Rep. of Germany, assignor to Seitz-Werke GmbH, Bad Kreuznach, Fed. Rep. of Germany

Filed Nov. 2, 1979, Ser. No. 90,533

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849741

Int. Cl.³ B65B *57/02*

U.S. Cl. 53—67 **4 Claims**



1. A control arrangement, especially for apparatus for closing containers such as bottles and the like to which a closure is to be secured, which apparatus includes a magazine for storing a plurality of closures, at least one closure transfer device, at least one channel for communicating a pertaining closure transfer device and said magazine, at least one means for securing a closure to a container, and conveyor means adapted to deliver containers to said at least one securing means, said arrangement comprising:

for each closure transfer device, a control member operatively arranged near the pertaining closure transfer device; and

for each control member an opto-electric sensing means operatively arranged in the vicinity of said conveyor means, adapted to sense the absence of a container on said conveyor means, and thereupon adapted to actuate a pertaining control member in such a way that said control member prevents release of a closure to a pertaining transfer device, with said conveyor means and said at least one securing means prescribing respective pitch circles tangent to one another and with each opto-electric sensing means being positioned at a predetermined distance away from said point of tangency, said conveyor means including a transport wheel having a plurality of circumferential pockets, with a container being adapted to be transported by said transport wheel in such a way that it is nestled in a pocket thereof, each opto-electric sensing means being adapted to emit a sensing beam adapted to intersect an exposed portion of a container conveyed by said transport wheel, a single closure transfer device, wherein the longitudinal central axis of a beam emitted by the pertaining opto-electric sensing means forms one side of an angle α the apex of which coincides with the axis of rotation of said transport wheel and the other side of said angle extends from said apex through said point of tangency, said angle α corresponding to a multiple of the angle of division β defined by an apex which coincides with the axis of rotation of said transport wheel and sides which extend through the centers of two immediately adjacent pockets of said transport wheel, and, when viewed starting from said point of tangency in the direction opposite to the direction of movement of said securing means, the angle α being defined by the product of said angle β multiplied by the number of closures present in the pertaining closure transfer device and on each securing means, at uninterrupted container sequence, said opto-electric sensing

means including a switch to render the opto-electric sensing means operational, means for actuating said switch, said switch actuating means including a shaft and a control cam operatively connectible to said shaft, with said cam being adapted to make one full revolution in conformity with movement of said transport wheel over a distance corresponding to said angle of division β, and being adapted to actuate said switch in the absence of a container in a pertaining pocket which is being monitored by said sensing means.

4,277,929

GRIPPING HEAD FOR SCREWING ON A THREADED CLOSURE

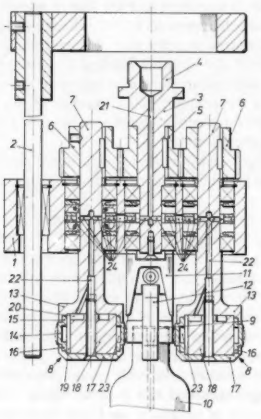
Hugo Schindel, Saulheim, Fed. Rep. of Germany, assignor to Rationator-Maschinenbau GmbH, Hillesheim, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,748

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1979, 2900713

Int. Cl.[3] **B67B** *3/20;* **B65B** *7/28*

U.S. Cl. 53—331.5 **2 Claims**



1. In a machine for screwing a threaded closure on a threaded neck of a container, the machine having a frame: a gripping head mounted on the machine frame, the gripping head comprising a pair of spaced-apart gripping spindles rotatably mounted in the machine frame, each gripping spindle having a clamping head comprising a cup-shaped carrier part and including a radially convex membrane, the membranes being arranged and spaced for gripping the closure therebetween, each membrane being an annular element of U-shaped cross section defining an annular chamber for receiving a pressure fluid medium, each gripping spindle defining conduit means for delivering the pressure fluid medium to the annular chamber for pressing the membrane radially outwardly into gripping engagement with the closure, and the clamping head further comprising a support roller mounted inside the annular membrane element and having substantially the same height, the support roller including radial and axial spacing ribs between the annular membrane element and the carrier part, respectively, and a clamping disc clamping the annular membrane element and the support roller to the carrier part, and a drive spindle mounted between the gripping spindles.

4,277,930

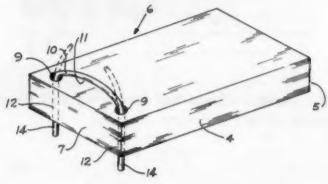
BAGS WICKETED ON A FLEXIBLE BINDING

Joseph A. Nausedas, Chicago, and Harry P. Eichin, Western Springs, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 808,310, Jun. 20, 1977, which is a continuation of Ser. No. 698,847, Jun. 23, 1976, which is a continuation of Ser. No. 516,240, Oct. 18, 1974. This application Jan. 29, 1979, Ser. No. 7,181

Int. Cl.[3] **B65B** *67/12*

U.S. Cl. 53—396 **2 Claims**



1. In a continuous process for the successive packaging of individual articles in a series of articles delivered sequentially to a packaging station, the improvement comprising the steps of:

providing a stack of flattened flexible packaging sheets held assembled on an elongate flexible binding member extending through registered wicket holes in said sheets, said member defining a hand grippable severable loop between the wicket holes of the topmost sheet of said stack and a shank extending from each wicket hole in the bottommost sheet of the stack,

mounting the stack of sheets on a sheet dispensing wicket base means arranged and disposed to secure the shank portions of the flexible binding member,

severing the flexible binding member at a point on the hand grippable loop and thereby forming upwardly extending free-ended flexible wicket elements holding said sheets in readiness for one at a time removal, and

removing the packaging sheets from the stack over said severed ends of the severed loop of the flexible binding member without tearing said sheets.

4,277,931

PACKAGING TECHNIQUES FOR SEMI-RIGID PACKAGES

Reid A. Mahaffy, Montclair, and Joel A. Hamilton, Englewood, both of N.J., assignors to Mahaffy & Harder Engineering Co., Totowa, N.J.

Continuation of Ser. No. 913,822, Jun. 8, 1978, abandoned, which is a division of Ser. No. 834,429, Sep. 19, 1977, Pat. No. 4,114,348, which is a continuation of Ser. No. 683,256, May 5, 1976, abandoned, which is a division of Ser. No. 384,717, Aug. 1, 1973, Pat. No. 3,972,155, which is a division of Ser. No. 860,590, Sep. 24, 1969, Pat. No. 3,792,181. This application Jul. 9, 1979, Ser. No. 55,765

Int. Cl.[3] **B65B** *61/18, 43/08*

U.S. Cl. 53—412 **2 Claims**

1. The method of packaging food products and the like comprising:

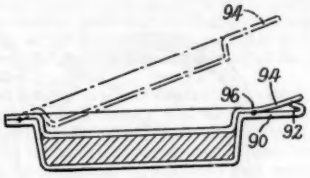
transporting a first continuous web of semi-rigid plastic packaging material along a first line of movement extending past a series of operating stations;

forming said first web at at least one of said stations into a series of receptacles each arranged to receive the product with at least a moderate amount of space between the top of the product and the opening of the receptacle, said receptacle having marginal flange portions around said opening;

transporting a second continuous web of semi-rigid plastic packaging material along a second line of movement

which joins said first line of movement at a region of joinder subsequent to said one station, at said region applying said second web such that it overlies said first web to cover said receptacles as the two webs continue to advance together; said second web including marginal outboard portions arranged to overlie said marginal flange portions of said receptacles as the two webs advance together;

before said second web comes into position with said marginal outboard portions overlying said marginal flange portions of said first web, forming at least a part of said



marginal portions of said first web back on itself to present a pocket into which the corresponding edge of a marginal portion of said second web can be inserted, to provide a positive reclosure after the package has been opened to remove a part of the container product;

whereby when said second web comes into position with said marginal outboard portions overlying said marginal flange portions, said marginal outboard portions will remain outside of said formed-back pocket; and

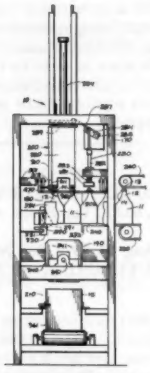
sealing said second web marginal portions to said first web marginal portions with said edge portion overlying the formed-back part of said first web marginal portions.

4,277,932

CASE PACKING MACHINE

Barry Campbell, Spokane, Wash., assignor to R. A. Pearson Company, Spokane, Wash.

Filed Oct. 15, 1979, Ser. No. 84,790
Int. Cl.³ B65B *5/08, 39/02*
U.S. Cl. 53—497 **14 Claims**



1. In a case packer for automatically packing bottles into cases, each bottle having an enlarged neck flange adjacent the bottle finish;

a framework;

a first station on the framework;

a second station on the framework below the first station;

conveyor means adjacent the first station for delivering groups of bottles to the first station;

bottle escapement means at the first station for receiving successive groups of bottles from the conveyor means, suspending the bottles by individual engagement of downwardly facing surfaces of the neck flange thereof and for selectively releasing the bottles as a group by disengaging the neck flanges;

bottle ram means adjacent the first station for engaging and moving successive groups of bottles from the first station to the second station;

escapement actuator means fixed on the bottle ram means for operating the escapement means to release a group of bottles in response to movement of the bottle ram means toward the second station;

an open ended holder on the framework at the second station for receiving, slidably supporting, and discharging successive groups of bottles delivered to the holder from the ram means and bottle escapement means; and

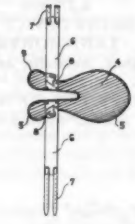
guide plates within the holder for urging each successive group of bottles to a defined cluster, for holding the bottles within the cluster, and for guiding the defined cluster of bottles downwardly in response to reception of a subsequent group of bottles from the ram means and bottle escapement means.

4,277,933

RIDING SADDLE

Henri Verdier, 1 Passage Traynes, 65000 Tarbes, France

Continuation of Ser. No. 829,042, Aug. 30, 1977, abandoned. This application Sep. 19, 1979, Ser. No. 77,062
Claims priority, application France, Aug. 25, 1976, 76 2186
Int. Cl.³ B68C *1/02*
U.S. Cl. 54—44 **7 Claims**



1. A riding saddle comprising a saddle-bow integral with a substantially oval cambered part forming a seat and two forward opening, divergent branches orientated in the same direction and separated from each other by a hollowed-out portion forming a gap into which the horse's withers will fit, said branches being freely and mutually unconnected.

4,277,934

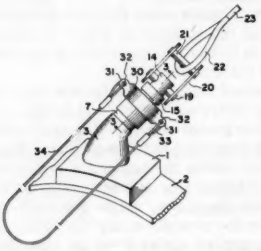
CHECKREIN RELEASABLE LATCHING MECHANISM

Kenneth H. Rieck, 531 N. Knight Rd., Bay City, Mich. 48706

Filed Mar. 21, 1979, Ser. No. 22,524
Int. Cl.³ B68B *5/00*
U.S. Cl. 54—70 **2 Claims**

1. A releasable checkrein latching mechanism comprising a body member having a cylindrical socket therein; means for mounting said body member on a harness; an anchor member having at one end thereof a projection removably accommodated in said socket and having at its other end means for attachment to a checkrein, said socket being formed by an annular wall having a plurality of circumferentially spaced openings therein; a plurality of locking balls corresponding in number to the number of said openings and being loosely accommodated therein, each of said balls having a diameter greater than the thickness of said wall, said projection having

an annular groove therein between its ends in a position to confront said balls when said projection is accommodated in said socket; an annular operating member encircling said body member and being slidable relative thereto between first and second positions, said operating member having an inner surface substantially flush with said projection and in engagement with said balls when said operating member is in said first position thereby causing portions of said balls to project into said annular groove, said operating member having an annular



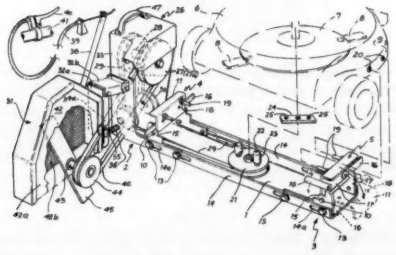
recess in its inner surface and confronting said balls when said operating member is in its second position thereby enabling said portions of said balls to be withdrawn from said annular groove; and flexible drive actuating means connected to said operating means for sliding said operating member from its said first position to its second position from a zone removed from said body member, said projection being removable from said socket and body member solely in response to movement of said operating member to said second position.

4,277,935

POWER TAKE-OFF DEVICE FOR ROTARY LAWNMOWER

John K. Degen, Sydney, Australia, assignor to June Shirley Degen, Forestville, Australia

Filed May 6, 1980, Ser. No. 147,069
Int. Cl.³ A01G *3/06*
U.S. Cl. 56—2 **11 Claims**



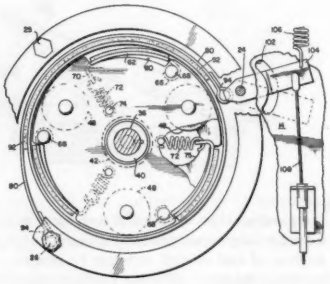
1. A lawn edge trimming appliance in the form of an accessory for a rotary lawnmower which includes a prime mover upon a baseplate surrounding and covering a cutter disc which mounts a plurality of cutting blades and is rotated by a drive shaft from the prime mover, said appliance comprising an elongated frame, means for fixing said frame to opposite parts of the periphery of said baseplate so that said frame is disposed on the diameter thereof, an upright housing upon an extension of said frame, a first rotatable pulley supported by the housing and a second rotatable pulley upon a portion of said frame beneath said baseplate, a driving connection between said pulleys, a driving connection between said second pulley and said cutter disc to cause rotation of said pulleys when the cutter disc is rotated by said prime mover, and at least one lawn edge trimming blade rotatable about the axis of a shaft driven by said first pulley.

4,277,936

COMBINED FLYWHEEL AND CLUTCH DRIVER, AND CONTROL AND WARNING DEVICE

Stephen J. Hoff, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.

Filed Aug. 13, 1979, Ser. No. 65,951
Int. Cl.³ A01D *69/08, 69/00*
U.S. Cl. 56—11.7 **15 Claims**



1. Lawn mower mechanism, comprising

a combined clutch and flywheel rotor including a hub adapted for rotation about an axis,

a pair of heavy, generally circular, metal plates mounted on said hub in spaced parallel relation in planes normal to said axis,

a plurality of spacer weights mounted between said plates at angularly spaced points about and adjacent the periphery thereof to add mass at the periphery of the rotor, the plates being secured together at said weights so as to fix the weights in place and to secure the plates against the weights as spacers,

a plurality of centrifugal clutch shoes mounted at angularly spaced positions about the periphery of said rotor, between said spacer weights, and means disposed axially between the plates for connecting the shoes in operative relation with the rotor, and

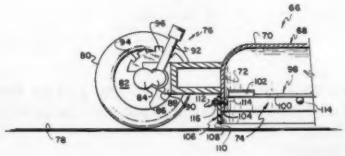
a vertical axis lawn mower engine having a depending output shaft, the rotor being mounted on the depending shaft, a clutch drum mounted coaxially with said shaft and surrounding the rotor so as to be engaged by said shoes, and a blade carried with said drum, said rotor having large mass sufficient to supply a major portion of the flywheel mass for the engine.

4,277,937

CONVERTIBLE ROTARY MOWER-VACUUM SWEEPER

Woodrow W. Luick, 602 E. Van Buren, Apt. 4, Harlingen, Tex. 78550

Filed Aug. 13, 1979, Ser. No. 66,225
Int. Cl.³ A01D *35/12, 55/18*
U.S. Cl. 56—17.5 **6 Claims**



1. A rotary lawn mower/vacuum sweeper, comprising

a frame having an imperforate top panel and a depending peripheral wall providing a grass discharge passage therein and providing a grass cutting chamber having a downwardly facing opening defined by the wall;

at least three wheels on the frame for rollably supporting the frame on an underlying surface, the points of contact of the wheels and the underlying surface generally defining a plane;

a motor mounted on the top panel and including a drive shaft extending into the chamber;

a grass cutting blade, in the chamber, affixed adjacent the center thereof to the shaft and including a grass cutting edge rotated by the shaft in cutting relation to grass over which the frame moves, the blade being configured as a fan for forcing air through the discharge passage and for drawing air inwardly under the underside of the peripheral wall and residing above the bottom of the peripheral wall and

means for creating an area of substantial air velocity directed inwardly of the peripheral wall throughout substantially the length thereof, effective for lifting debris off the underlying surface in a generally annular band corresponding to the location of the peripheral wall, including

a skirt substantially the length of the peripheral wall, providing a lower edge and an imperforate portion above the lower edge and

means dependingly mounting the skirt on the frame in generally coaxial relation to the peripheral wall positioning the imperforate portion below the lower edge and spacing the lower edge from the plane but less than about ¾" thereabove for drawing air inwardly into the chamber under the lower skirt edge upon operation of the motor;

any obstruction of the chamber opening by the creating means providing an insignificant increase in air velocity under the lower skirt edge.

4,277,938

COMBINATION ROTATING FLUIDIZED BED COMBUSTOR AND HEAT EXCHANGER

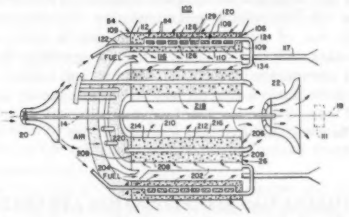
William H. Belke, Peoria, and George B. Grim, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00843, §371 Date Oct. 15,1979, §102(e) Date Oct. 15, 1979

This PCT application filed Oct. 15, 1979, Ser. No. 136,654

Int. Cl.³ F02C *3/26;* F23D *19/00*

U.S. Cl. 60—39.35 **63 Claims**



1. A combination rotatable fluidized bed heat exchanger (54) and rotatable fluidized bed combustor (26), said heat exchanger (54) comprising:

a. a first elongated perforated wall (108);

b. a second perforated wall (110) spaced apart and substantially co-extensive with said first perforated wall (108);

c. enclosing walls (109) defining with said first and second perforated walls (108, 110) a first fluidization chamber (112);

d. a first bed of pulverulent solid particles (114) in said first chamber (112);

e. means (111) for rotating said first chamber (112) about an axis (18) to cause the first particles (114) to centrifugally gravitate toward said first perforated wall (108);

f. means (102) for feeding a relatively hot first fluid into said first chamber (112) through said first perforated wall (108) and out of said first chamber (112) through said second perforated wall (110), said first fluid heating said first particles (114) in said first chamber (112);

g. means (102) for feeding a gaseous agent into said first chamber (112) through said first perforated wall (108) and out of said first chamber (112) through said second perforated wall (110), said gaseous agent having flow characteristics suitable for fluidizing said first particles (114) in said first chamber (112);

h. at least one tube (120) in said first chamber (112) extending substantially co-extensively with said walls (108, 110) for passing a relatively cool second fluid therethrough, whereby said second fluid is heated by the heat bed particles and said relatively hot first fluid is cooled; and

i. means (134) for directing said heated second fluid to said rotatable fluidized bed combustor (26) for exothermically reacting said heated second fluid and a fuel; said combustor (26) comprising:

j. a third elongated perforated wall (208);

k. A fourth perforated wall (210) spaced apart and substantially co-extensive with said third perforated wall (208);

l. enclosing walls (209) defining with said third and fourth perforated walls (208, 210) a second fluidization chamber (212);

m. a second bed of pulverulent solid particles (214) in said second chamber (212);

n. means (14) for rotating said second chamber (212) about an axis (18) to cause the second particles (214) to centrifugally gravitate toward said third perforated wall (208);

o. means (202) for feeding said heated second fluid into said second chamber (212) through said third perforated wall (208) and out of said second chamber (212) through said fourth perforated wall (210), said heated second fluid having flow characteristics suitable for fluidizing said second particles (214) in said second chamber (212);

p. means (204, 202) for introducing a combustible fuel through said third perforated wall (208) into said second chamber (212), said fuel reacting with at least a portion of said heated second fluid in said second chamber (212) to form gaseous combustion products;

q. means (216) for receiving said gaseous combustion products and unreacted heated second fluid exiting from said second chamber (212) through said fourth perforated wall (210); and

r. means (218) for directing said unreacted heated second fluid and said gaseous combustion products exiting said fourth perforated wall (210) away from said second chamber (212).

4,277,939

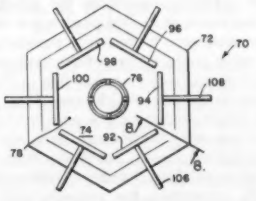
ION BEAM PROFILE CONTROL APPARATUS AND METHOD

Julius Hyman, Jr., Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 9, 1979, Ser. No. 27,971

Int. Cl.³ F02K *9/00;* F03H *5/00*

U.S. Cl. 60—202 **16 Claims**



1. An ion source comprising:

a plasma chamber having an axis and having a housing, an

electron source adjacent one end of said axis and ion extraction optics adjacent the other end of said axis, anode means around said axis and around said plasma chamber for applying anode potential to said plasma chamber;

means for supplying ionizable material to said plasma chamber;

a cathode for supplying electrons to said plasma chamber for movement toward said anode means for ionizing the ionizable material as the electrons pass from said cathode to said anode means;

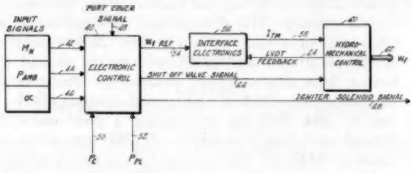
a spoiler positioned between said cathode and said extraction optics, means for biasing said spoiler said spoiler having a plurality of segments and each of said segments of said spoiler being individually connected to said biasing means to individually bias said spoiler segments more positive than said housing so that the reduction of peaking around said axis can be individually controlled by each of said segments to control the uniformity of ion beam flux through said extraction optics.

4,277,940

INTEGRAL ROCKET-RAMJET CLOSED LOOP FUEL CONTROL SYSTEM

Kermit I. Harner, Windsor, and John P. Patrick, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 25, 1979, Ser. No. 60,444
Int. Cl.³ F02K *9/06*
U.S. Cl. 60—243 **13 Claims**



1. In an integral rocket-ramjet vehicle having a combustion chamber, a source of ramjet fuel and an inlet supplying air to said combustion chamber, a fuel control for modulating the flow of fuel from said source to said combustion chamber upon termination of the rocket phase of vehicle operation comprising:

means responsive to termination of the rocket phase of operation for producing a first signal indicative of desired fuel-to-air ratio upon ignition of said fuel in said combustion chamber, and indicative of a maximum fuel-to-air ratio after ignition of said fuel;

means responsive to first selected vehicle operating conditions for producing a signal indicative of desired combustion chamber to reference pressure ratio to limit said vehicle maximum Mach number to a value satisfactory with regard to structural or aerodynamic heating characteristics;

inlet margin scheduling means responsive to second selected vehicle operating conditions for scheduling a second signal indicative of desired combustion chamber to reference pressure ratio to maximize pressure recovery of the shock wave produced by airflow through said inlet;

least select means receiving said first and second pressure ratio signals and selecting the one of said first and second signals which produces the lowest fuel-to-air ratio;

means for measuring the pressures from which said pressure ratio signals are derived and producing a signal indicative of actual combustion chamber to reference pressure ratio;

means for comparing the pressure ratio signal passed through said least select means with said actual pressure ratio signal and producing a pressure ratio error signal;

closed loop integrator means for receiving said pressure ratio error signal and producing therefrom a desired fuel-to-air ratio signal which does not exceed said maximum fuel-to-air ratio; and

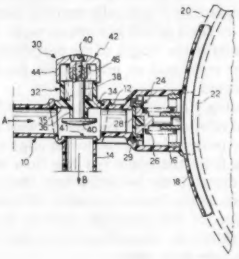
fuel scheduling means including valve means responsive to said desired fuel-to-air ratio signal for metering the desired amount of fuel from said source to said combustion chamber.

4,277,941

DEVICE FOR THE REDUCTION OF THE EMISSION OF POLLUTANT GASES PRODUCED BY INTERNAL COMBUSTION, SPARK-IGNITION, ENGINES FOR MOTOR VEHICLES

Mario Povero, Poirino, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed May 29, 1979, Ser. No. 43,602
Claims priority, application Italy, Jul. 7, 1978, 53526/78[U]
Int. Cl.³ F01N *3/10*
U.S. Cl. 60—307 **3 Claims**



1. A device for reducing the emission of pollutant gases from a spark ignition internal combustion engine for motor vehicles comprising an air-feed pipe for connection to exhaust ducts of said engine for the supply of air thereto, said air-feed pipe being comprised of first and second sections of integral one-piece construction disposed at right angles to each other with one end of said first section being adapted to be connected to said exhaust ducts, fitting means secured to one end of said second section for connection to the air intake of said engine and a manually operable interception valve secured in said air-feed pipe adjacent the opposite ends of said first and second sections for controlling communication therebetween, said opposite end of said first section defining a valve seat for cooperation with said valve upon manual operation thereof to prevent communication between said first and second sections and resilient means acting on said valve for normally maintaining said valve spaced from said valve seat to provide communication between said first and second sections.

4,277,942

EXHAUST GAS RECIRCULATION APPARATUS

Rolf A. Egnell, Genarp, and Bengt L. Hansson, Bjärred, both of Sweden, assignors to Kommanditbolaget United Stirling, Malmo, Sweden

Filed Feb. 28, 1979, Ser. No. 16,079
Int. Cl.³ F02G *1/04*; F23C *9/02*
U.S. Cl. 60—517 **22 Claims**

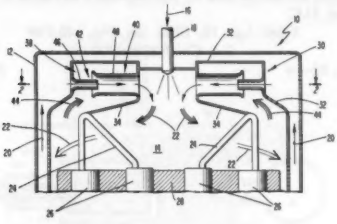
1. Apparatus for recirculating a portion of the exhaust gases from an exhaust gas stream resulting from the combustion of an inlet fuel stream and an inlet air stream in a burner region, the apparatus comprising:

(a) wall means for separating the inlet air stream from the burner region and the exhaust gas stream;

(b) heat exchanger means associated with said wall means for extracting heat values from the exhaust gas stream to cool all the exhaust gases, said heat exchanger means also enclosing in part the burner region; and

(c) ejector means formed in said wall means for admitting

the inlet air stream into the burner region and for entraining and mixing a portion of the cooled exhaust gases from the cooled exhaust gas stream in the air being admitted,



and air/cooled exhaust gas mixture being formed immediately prior to being admitted to the burner region,

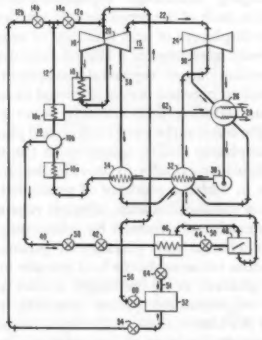
the recirculated exhaust gases providing lower combustion temperatures and reduced NO_x formation in the burner region.

4,277,943

METHOD AND APPARATUS FOR SUPPLYING STEAM TO A TURBINE

George J. Silvestri, Jr., Upper Chichester, and Krishnamurthy Kesavan, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 10, 1979, Ser. No. 83,437
Int. Cl.³ F01K *13/02*
U.S. Cl. 60—646 **7 Claims**



1. A system for providing fluid having pressures and temperatures which are adjustable within predetermined ranges, said system comprising:

means for successively reducing the pressure and temperature of a first source fluid to respectively produce a regulated fluid and a controlled fluid when the desired fluid temperature is less than the temperature of a higher temperature, second source fluid;

means for heating the vapor component of the controlled fluid with said regulated fluid, said heating means being in fluid communication with a fluid utilizing device;

means for regulating the flow rate of said second source fluid to the fluid utilizing device when the desired fluid temperature is greater than the regulated fluid's temperature; and

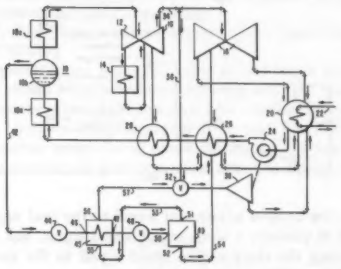
means in fluid communication with said heating means, flow rate regulating means, and fluid utilizing device for mixing the heated controlled fluid vapor with the second source fluid to create a resultant fluid when the desired fluid temperature is greater than said regulated fluid's temperature and less than said second source fluid's temperature:

4,277,944

METHOD AND APPARATUS FOR REGENERATIVELY SUPERHEATING AUXILIARY STEAM

George J. Silvestri, Jr., Aston, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 10, 1979, Ser. No. 83,436
Int. Cl.³ F01K *7/44*
U.S. Cl. 60—670 **6 Claims**



1. A system for providing elastic fluid having a pressure and temperature which are adjustable within a predetermined range comprising:

means for regulating a high pressure fluid's pressure to an intermediate pressure;

heat exchanger means for transfering heat from the intermediate pressure elastic fluid to an elastic fluid of low pressure and temperature, said heat exchanger means having an intermediate pressure fluid inlet opening, an intermediate pressure fluid outlet opening, a low pressure inlet opening, and a low pressure fluid outlet opening, said intermediate pressure fluid inlet opening being in fluid communication with said high pressure regulating means, said low pressure fluid exiting said low pressure fluid outlet opening being at the desired pressure and temperature;

means for regulating the pressure of the intermediate pressure fluid to a low pressure, said intermediate pressure fluid regulating means being in fluid communication with said intermediate pressure fluid outlet opening; and

means for separating vapor and liquid phases of the low pressure elastic fluid, said separating means having an inlet port in fluid communication with said intermediate pressure fluid regulating means, a liquid outlet port for expelling separated low pressure elastic fluid liquid, and a vapor outlet port in fluid communication with said heat exchanger means' low pressure inlet opening for transmitting said low pressure vapor thereto.

4,277,945

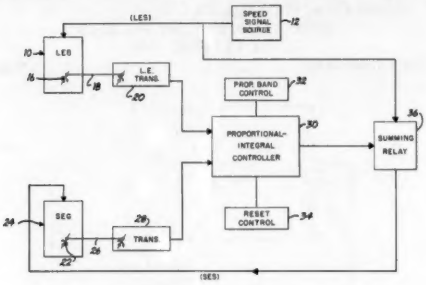
CONTROL SYSTEM FOR EQUALIZING THE TORQUES OF MULTIPLE ENGINES DRIVING A COMMON LOAD

William F. Esthimer, Walpole; Edward H. Morin, Sharon, and Richard E. Trudell, Hingham, all of Mass., assignors to Bird-Johnson Company, Walpole, Mass.

Filed Jun. 28, 1979, Ser. No. 53,087
Int. Cl.³ F01B *21/00*
U.S. Cl. 60—710 **8 Claims**

1. A control system for equalizing the torques of a slave engine and a lead engine driving a common load, each engine including a throttle controlled by a governor, comprising means for producing a selected lead engine speed signal and supplying it to the governor of the lead engine, means for detecting the throttle setting of each engine and producing a throttle setting signal indicative of each such setting, means for comparing the throttle setting signals of the lead engine and the slave engine and producing an error signal indicative of the difference in throttle settings, processing means for continuously processing the error signal to produce a control adjust-

ment signal substantially equal to a selected gain times the sum of the instantaneous error signal and the integral of the error signal over a selected reset time, means for adding algebra-



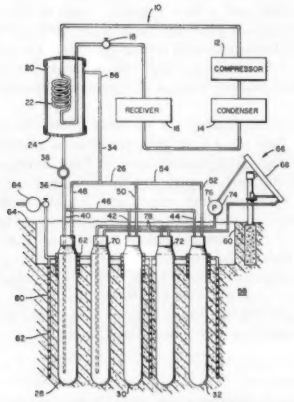
ically the control adjustment signal to the lead engine speed signal to produce a slave engine speed signal, and means for supplying the slave engine speed signal to the slave engine speed controller.

4,277,946

HEAT PUMP

Edward W. Bottum, 9357 Spencer Rd., Brighton, Mich. 48116

Filed Aug. 13, 1979, Ser. No. 66,046
Int. Cl.³ F25B *27/00, 27/02;* F25D *23/12*
U.S. Cl. 62—235.1 **9 Claims**



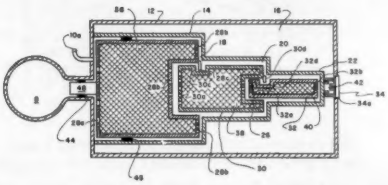
1. The method of providing heat from an earth type heat pump comprising connecting a heat exchanger, compressor, condenser, receiver and expansion in series, whereby refrigerant in the form of gas received at the compressor is compressed and passed to the condenser wherein heat is given off and the gas is liquefied and passed to the receiver from which it is passed through the expansion valve into the heat exchanger, providing heat to the heat exchanger through heat pickup tubes vertically positioned in the earth to evaporate the refrigerant in the heat exchanger into a refrigerant gas, assisting the heat pickup of the heat pickup tubes by supplying solar heat to the earth through a collector, heater tubes vertically positioned in the earth adjacent the heat pickup tubes and means for circulating a heat transfer medium through the solar collector and heater tubes, and moistening the earth around the heat pickup tubes to increase the heat transfer from the earth to the heat pickup tubes.

4,277,947

CRYOGENIC COOLER HAVING TELESCOPING MULTISTAGE REGENERATOR-DISPLACERS

Peter Durenec, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 16, 1980, Ser. No. 140,939
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **20 Claims**



1. In a closed cryogenic cooling system comprised of a telescoping multistage regenerator-displacer assembly for providing constant low cryogenic temperatures; the system comprising:

a working fluid pressure wave producing means for imparting pressure waves to a working fluid at an input end of said telescoping multistage regenerator-displacer assembly; and

a plurality of regenerator-displacers within a displacer cylinder that is enclosed by a vacuum jacket in which said plurality of regenerator-displacers are progressively smaller from said input end to an output cold end of said telescoping multistage regenerator-displacer assembly wherein each of the progressively smaller adjacent regenerator-displacers of said plurality of regenerator-displacers freely telescope for a limited axial distance within the preceeding larger regenerator-displacer in response to alternating pressure waves imparted to said working fluid by said working fluid pressure wave producing means with the outer surfaces of each of said plurality of regenerator-displacers fitting snugly with the inner surfaces of said displacer cylinder to provide clearance seals therebetween in which a plurality of precooled cold station expansion volumes between adjacent regenerator-displacers are intermittently formed by telescoping action therebetween wherein said plurality of precooled cold station expansion volumes shuttle heat transfer in an axial temperature gradient along the length of said telescoping multistage regenerator-displacer assembly to progressively lower the temperature of the input environments of each regenerator-displacer of said assembly to maintain a constant low cryogenic temperature at said output cold end.

4,277,948

CRYOGENIC COOLER WITH ANNULAR REGENERATOR AND CLEARANCE SEALS

Stuart B. Horn, Fairfax; Mark S. Asher, Woodbridge, and Howard L. Dunmire, Stafford, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 27, 1980, Ser. No. 163,853
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **3 Claims**

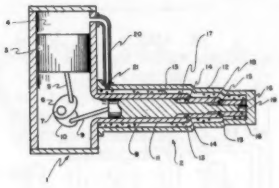
1. In a Stirling Cycle cryogenic cooler having at least a compressor portion and a cold finger expander portion with a cryogenic fluid in said portions whereby the improvement comprises:

a cold finger expander portion including a displacement piston of a nonmetallic material and having segments of different diameters;

a first shell of said material mainly closely surrounding said piston and having different inside and outside diameters

corresponding to the different diameters of said piston whereby different expansion spaces are defined between said piston and said shell;

a second shell surrounding said first shell and having different inside diameters greater than respective outside diameters of said first shell whereby said shells define a regenerator space between them;



bores communicating between said expansion spaces and said regenerator space; and

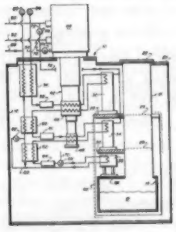
thermal regenerative material in said regenerative space.

4,277,949

CRYOSTAT WITH SERVICEABLE REFRIGERATOR

Ralph C. Longsworth, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 22, 1979, Ser. No. 51,462
Int. Cl.³ F17C *13/00*
U.S. Cl. 62—54 **11 Claims**



1. A thermal coupling interposed between a source of refrigeration and an object to be cooled comprising in combination:

an elongated fluid-tight housing having first and second ends, said first end adapted to mechanically contact a source of refrigeration and said second end adapted to mechanically contact said object to be cooled;

means within said housing having a flow path whereby a fluid in the form of a gas which remains gaseous at the lowest temperature provided by said refrigeration source and disposed within said housing, can when warmed by giving up refrigeration rise from said second end toward said first end where it is cooled and returned to said second end along a separate path without contacting warmed rising gas.

4,277,950

CRYOGENIC LIQUID TRANSFER TERMINATION APPARATUS

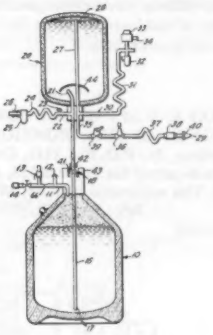
Lester K. Eigenbrod, Indianapolis; Gerald F. Kidder, Speedway, and Robert L. Zeunik, Carmel, all of Ind., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 29, 1980, Ser. No. 125,889
Int. Cl.³ F17C *7/02*
U.S. Cl. 62—55 **7 Claims**

1. In a cryogenic liquid storage-gas supply system including a thermally insulated cryogenic liquid supply container, a thermally insulated cryogenic liquid storage-dispensing container, liquid transfer conduit means with an inlet end terminating in the bottom part of said supply container and a discharge end terminating in said storage-dispensing container, vapor vent conduit means with an inlet end terminating in the upper part of said storage-dispensing container in the liquid transfer position and an outlet end outside the containers and open to the atmosphere: the improvement of a cryogenic liquid transfer termination assembly comprising:

(a) first fluid flow resistance means in said vapor vent conduit means;

(b) a quick-closing plug-type valve in said vapor vent conduit means being positioned between said first fluid flow resistance means and the vapor vent conduit means outlet end, and: (i) being separated from said first fluid flow resistance means by an uninsulated length of said vapor vent conduit, (ii) having a valve seat, (iii) a plug member



contiguously positioned against the upstream surface of said valve seat, (iv) mechanical spring means positioned to urge said plug away from said valve seat, and (v) plug movement means having a first end rigidly joined to said plug and a second end in fluid communication with said first fluid flow resistance means through a higher pressure length of said vapor vent conduit;

(c) said higher pressure length of said vapor vent conduit being arranged and constructed without substantial fluid flow constriction when the plug is urged away from said seat;

(d) second fluid flow resistance means having less fluid flow resistance than said first fluid flow resistance means, and positioned between said plug movement means second end and the vapor vent conduit means outlet end to provide a lower pressure length; and

(e) manual opening means for said quick-closing plug-type valve, positioned within said vapor vent conduit means outside said storage-dispensing container.

4,277,951

CRYOPUMPING APPARATUS

Ralph C. Longsworth, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

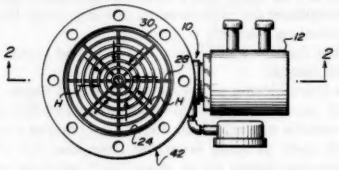
Filed Apr. 10, 1980, Ser. No. 139,032
Int. Cl.³ B01D *8/00*
U.S. Cl. 62—55.5 **10 Claims**

1. In a cryopumping apparatus of the type including an elongated source of refrigeration adapted for mounting to a vacuum chamber and capable of producing a warm refrigeration stage of from 40 to 120K and a cold refrigeration stage of from 10 to 30K, the improvement comprising:

a generally open top pan-shaped housing adopted for mount-

ing said refrigeration source to said vacuum chamber whereby said open top of said pan can mate to and close a complementing opening in said vacuum chamber;

a first or warm panel thermally connected to said warm refrigeration stage and adapted to shield said refrigeration source from ambient radiant heat;



a second or cold panel thermally connected to said cold stage of refrigeration; and

a chevron baffle or louver closing a substantial portion of the open top of said housing and in thermal contact with said warm refrigeration stage.

4,277,952

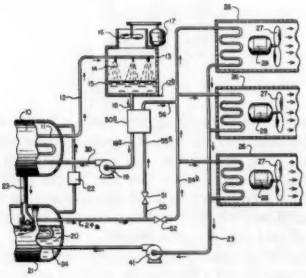
METHOD AND APPARATUS FOR CONSERVING ENERGY IN AN AIR CONDITIONING SYSTEM

George Martinez, Jr., P.O. Box 1141, Gonzales, La. 70737

Continuation-in-part of Ser. No. 928,538, Jul. 27, 1978, Pat. No. 4,201,063. This application Nov. 15, 1979, Ser. No. 94,656

Int. Cl.³ F25B *1/00*

U.S. Cl. 62—115 **9 Claims**



7. A method for conserving energy in an air conditioning system having condenser means, evaporator means, cooling tower means, cooling unit means, first liquid circuit means for circulating liquids between said evaporator means and cooling unit means, second liquid circuit means for circulating liquids between said condenser means and said cooling tower means, means for conveying liquid refrigerant from said condenser means to said evaporator means, means for conveying refrigerant from said evaporator means to said condenser means, and heat exchanger means, comprising:

a. de-energizing said means for conveying refrigerant from said evaporator means to said condenser means;

b. connecting said first liquid circuit means to said heat exchanger means to permit said liquids in said first liquid circuit means to be conveyed to and circulated through said heat exchanger means;

c. connecting said second liquid circuit means to said heat exchanger means to permit said liquids in said second liquid circuit means to be conveyed to and circulated through said heat exchanger means; and,

d. circulating said liquids in said first and second liquid circuit means through said heat exchanger means.

4,277,953

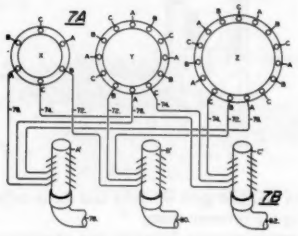
APPARATUS AND METHOD FOR DISTRIBUTING VOLATILE REFRIGERANT

Daniel E. Kramer, 2009 Woodland Dr., Yardley, Pa. 19067

Filed Apr. 30, 1979, Ser. No. 34,777

Int. Cl.³ F25B *5/00*

U.S. Cl. 62—117 **18 Claims**



1. Conduit means for conveying a first refrigerant flow stream, evaporating means having a refrigerant inlet side and a refrigerant outlet side, flow dividing means positioned entirely between the conduit means and the inlet side of the evaporating means for receiving and for dividing said first refrigerant flow stream into at least two substreams, said flow dividing means comprising: primary distributor means for receiving the first refrigerant flow stream and dividing said first stream into at least three feeder refrigerant flow streams, means for receiving and recombining the feeder streams into at least two substreams.

4,277,954

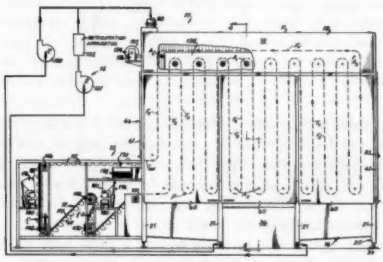
FOOD PRODUCT CHILLER

Russell F. Drummond, 532 Embry La., Marietta, Ga. 30066

Filed Nov. 1, 1979, Ser. No. 90,333

Int. Cl.³ F25D *17/02*

U.S. Cl. 62—375 **10 Claims**



1. A chiller for edible food products using a heat transfer liquid comprising:

an enclosure having upper and lower portions;

endless conveyor means for conveying the edible food products along a serpentine path through said enclosure, said conveyor means defining a plurality of spaced apart, substantially vertically extending flights within said enclosure, said flights generally parallel to each other and alternating between substantially vertical upward movement and substantially vertical downward movement so that the edible food products are alternately moved substantially vertically upwardly and downwardly along the serpentine path within said enclosure; and

liquid control means for supplying the heat transfer liquid to the upper portion of said enclosure so that the heat transfer liquid is moved toward the lower portion of said enclosure under the influence of gravity and for directing the

flow of the heat transfer liquid flowing down through said enclosure in flow paths in registration with the food products moving along said substantially vertical flights by said endless conveyor means so that substantially all of the heat transfer fluid flows down over the edible food products moving along said substantially vertical flights.

4,277,955

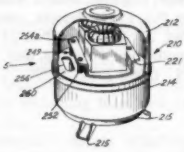
TWIN COMPRESSOR MECHANISM IN ONE ENCLOSURE

Sidney A. Parker, Ft. Worth, Tex., assignor to Lennox Industries, Inc., Ft. Worth, Tex.

Filed Sep. 13, 1979, Ser. No. 75,251

Int. Cl.³ F25B *1/10*

U.S. Cl. 62—510 **11 Claims**



1. In a refrigerant compressor, an outer casing, at least two separate compression mechanisms joined together by a mounting ring within said outer casing, discharge gas means communicating with said compression mechanisms for forwarding discharge gas from the compression mechanisms, and suction gas means communicating with the outer casing for returning suction gas to said compression mechanisms, baffle means secured within said outer casing dividing the interior of said outer casing into upper and lower compartments, said baffle means having an opening therein through which the compression mechanisms extend, said baffle means separating the suction gas and the discharge gas in the outer casing, and control means for controlling the operation of the separate compression mechanisms including means within the outer casing for preventing flow of discharge gas from one compression mechanism to the other compression mechanism when said other compression mechanism is inoperative.

4,277,956

SPLINE DRIVE ARRANGEMENT

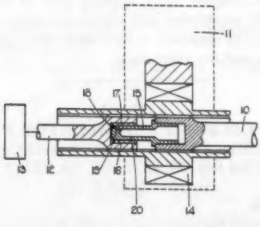
Jeffrey A. Lane, Olton, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Sep. 17, 1979, Ser. No. 76,230

Claims priority, application United Kingdom, Sep. 29, 1978, 38800/78

Int. Cl.³ F16D *3/18*

U.S. Cl. 64—9 R **4 Claims**



1. In a system including first and second pumps, a connecting shaft drivingly coupling said pumps and an input drive shaft coupled to said first pump, a splined coupling between said first pump, said input shaft and said connecting shaft, said coupling comprising an internally-splined part drivingly connected to said first pump, external spline portions on said input and connecting shafts respectively, one of said shafts having an axially-extending portion and the other of said shafts having an axial bore, said axially-extending portion and said bore being inter-engaged so as to restrain relative angular movement between the axes of said shafts, the free end of said axially-extending portion and said bore defining therebetween a space within said other shaft, means within said first pump for maintaining said space full of liquid, and flow restricting means through which said liquid can enter and leave said space.

4,277,957

SPLINE DRIVE ARRANGEMENTS

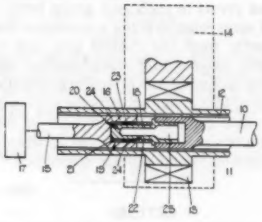
Jeffrey A. Lane, Olton, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Sep. 17, 1979, Ser. No. 76,231

Claims priority, application United Kingdom, Sep. 29, 1978, 38799/78

Int. Cl.³ F16D *3/18*

U.S. Cl. 64—9 R **3 Claims**



1. A spline drive arrangement including an internally splined member in driving engagement with first and second axially aligned externally splined members, an axial projection on said first member, an axial bore in said second member, said bore surrounding said projection, an annular elastomeric element surrounding said projection and frictionally engaging said projection and said bore, and means for locating said elastomeric element axially with respect to said first member, said locating means comprising two axially spaced annular parts on said projection, said elastomeric element being located between said annular parts.

4,277,958

FLEXIBLE SHAFT COUPLING

Josef Hackforth, and Jürgen Walter, both of Herne, Fed. Rep. of Germany, assignors to Hackforth GmbH & Co. KG, Herne, Fed. Rep. of Germany

Filed Jul. 26, 1978, Ser. No. 927,958

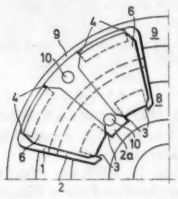
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734279

Int. Cl.³ F16D *3/17*

U.S. Cl. 64—11 R **3 Claims**

1. In a flexible shaft coupling comprising first and second rigid coupling parts arranged concentrically one within the other about a central axis, first and second annular assemblies, said annular assemblies being concentric with a space between them and each of said annular assemblies including a plurality of members circumferentially spaced apart around the central axis, and transmission means interconnecting said members to transmit torque between said rigid coupling parts, said transmission means including a plurality of elastomeric masses and a plurality of groups of radially directed filament loops, each of said groups being embedded in one of said masses and extending round one of said members in said first annular assembly and round one of said members in said second annular assem-

bly to interconnect said assemblies, said loops including parts between said members and elastic cushion means supporting said parts for displacement inwards into gaps between said members and within said elastomeric masses, the improvement comprising means pivotally mounting each of said groups and each of said masses of elastomeric material whereby said groups and said masses can pivot relative to said rigid coupling parts about axes which are parallel to the central axis of said coupling parts and said pivot means comprises a plurality of groups of pivots, each said group of pivots comprising a first



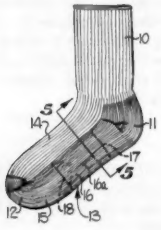
pivot connected to said first rigid coupling part and a second pivot connected to said second rigid coupling part with said first and second pivots in each said group being disposed in radially spaced apart relation along a rectilinear line extending radially outwardly from the central axis, and two of said groups of filament loops extend around each of said members, and said first and second pivots pivotally connect each of said members to one of said coupling parts for movement about an axis parallel to said central axis, and each of said members being in the form of a sector which is circumferentially spaced from adjacent sectors in said annular assemblies.

4,277,959

SOCKS WITH INTEGRALLY KNIT CUSHIONS IN HEEL, ARCH AND BALL

James L. Thorneburg, P.O. Box 5440, Statesville, N.C. 28677

Filed Mar. 24, 1980, Ser. No. 132,784
Int. Cl.³ D04B *9/46;* **A41B** *11/02*
U.S. Cl. 66—182 **7 Claims**



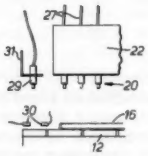
1. A knit athletic sock for providing additional cushioning in the heel, ball and inner arch areas of a wearer's foot and particularly adapted for wear with athletic shoes having arch supports which fail to provide suffficient support and cushioning to prevent discomfort to the wearer's heel, ball and arch areas during participation in vigorous athletic activities such as jogging and running, said sock comprising a lower sole including a heel portion adjacent one end of said sole, an arch area in the medial portion of said sole, and a ball portion adjacent the other end of said sole, said arch area including inner and outer arch portions positioned on opposite sides of said sole and extending coursewise from substantially the middle wale of said sole, said inner arch portion including an onegrally knit shock absorber and support cushion formed by a sufficiently greater amount of yarn being knit in the inner arch portion than the amount of yarn being knit in said outer arch portion to provide increased thickness in the inner arch portion which is adapted to underlie the inner arch of the wearer's foot, said heel and said ball portions also including an integrally knit shock absorber cushion of the same types as said shock absorber and support cushion in said inner arch portion, said shock absorber cushions in said heel and ball areas enhancing the cushioning on the heel and ball of the wearer's foot, said shock absorber and support cushion in said inner arch portion enhancing the cushioning and support of the inner arch area of the wearer's foot, and thereby reducing the shock normally imparted to the wearer's foot so that normal acticulation of the bones in the foot takes place during participation in vigorous athletic activities.

4,277,960

SYNCHRONIZATION OF MULTIPLE STREAM LIQUID APPLICATION PROCESSES

George A. R. McKendrick, Port Vila; Ian G. Bartlett, Belmont, and Donald A. Lymer, Highton, both of Australia, assignors to Tybar Engineering Pty. Ltd., Victoria, Australia

Filed Jan. 21, 1980, Ser. No. 113,669
Claims priority, application Australia, Jan. 24, 1979, PD7458
Int. Cl.³ D06B *1/02, 11/00, 23/10*
U.S. Cl. 68—205 R **5 Claims**



1. Apparatus for applying liquid such as a liquid dye to a moving strip comprising:

conveyor means for carrying a strip past liquid applications stations;

a plurality of spaced liquid application stations each including an array of multiple openings arranged above and transversely of the conveyor means;

means including a programmable electronic control for selectively controlling the successive application of portions of liquid to the strip in respective sets of multiple streams at the liquid application stations, whereby said portions once applied are complementary so as to give rise to a pattern on the strip;

means at each dye application station for emitting a respective test stream of liquid for the station;

means for detecting each test stream and generating in response thereto an electrical signal indicating the time of its emission;

means for receiving said signals and comparing the time of emission of each test stream with one or more reference times thereby to generate a correction signal indicative of the extent of longitudinal asynchronism; and

means to be coupled to or forming part of said electronic control for modifying said selective control of the multiple streams in response to said correction signal whereby to reduce said asynchronism.

4,277,961

SECURITY LOCK NUT ASSEMBLY FOR PADLOCKS

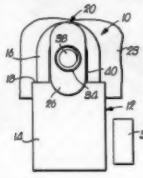
Theodore L. Williams, 1200 E. 101 St., Kansas City, Mo. 64131

Filed Sep. 10, 1979, Ser. No. 73,884
Int. Cl.³ E05B *67/38*
U.S. Cl. 70—54 **4 Claims**

1. An assembly for securing a padlock in place adjacent a surface for preventing forced opening of the padlock, said padlock having a base and a shackle operably coupled to the base, said assembly comprising:

a padlock keeper including an elongated, padlock-engaging element, and an elongated shaft connected to said element and configured to pass through a first area towards said surface, said first area being cooperatively defined between said shackle and base when said padlock is closed; and

means for releasably maintaining said keeper proximal to said surface with said keeper being adjacent said padlock



and with the padlock being disposed between said surface and said keeper,

said keeper-maintaining means comprising a threaded bore in said shaft, and complemental screw means operatively secured to and extending from said surface and received within said bore,

said keeper-maintaining means including structure for permitting release of the keeper only after opening of said shackle.

4,277,962

DEVICE FOR BLOCKING KEY PASSAGE OF A LOCK

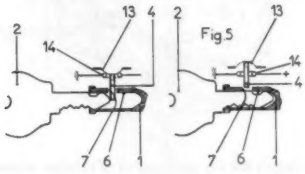
Paul Lipschutz, Croissy, France, assignor to Neiman SA, France

Filed May 17, 1979, Ser. No. 39,981

Claims priority, application France, Jun. 6, 1978, 78 17100

Int. Cl.³ E05B *17/14*

U.S. Cl. 70—423 **4 Claims**



1. A device for blocking the key passage of a lock, comprising:

(a) a movable abutment which can occupy a first position in which it blocks the key passage and a second position in which it clears the said passage, and

(b) a thermo-deformable element for moving said abutment from the first position to the second position when activated.

4,277,963

KEY LOOP

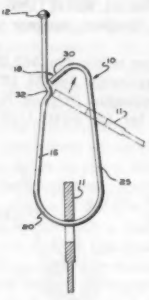
Oskar A. Hellwig, Springfield, Mass., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Aug. 31, 1979, Ser. No. 71,790

Int. Cl.³ A47G *29/10*

U.S. Cl. 70—456 B **3 Claims**

1. Key loop for releasably mounting keys on a support member disposed within a key case comprising an integral resilient loop which includes an enlarged head for attachment of the loop to the support member, a shank portion extending downwardly from the head, said loop reversibly extending outwardly and upwardly from the lower end of said shank portion with its free end terminating adjacent the shank in spaced coplanar relation defining an access opening adapted for fitting the apertured head of a key onto the free end of said loop, at said free end a retainer portion extending inwardly and downwardly toward the closed end of said loop for preventing the unintentional separation of a key from the loop said shank



portion including a crimp with its convex surface disposed within the loop and adjacent the free end retainer portion thereof.

4,277,964

DOOR LOCK

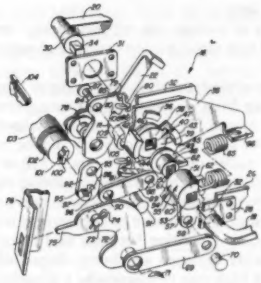
Elmer R. Crabb, Aurora, and Alta M. Parr, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00088, §371 Date Feb. 15, 1979, §102(e) Date Feb. 15, 1979, PCT Pub No. WO80/01703, PCT Pub. Date Aug. 21, 1980

This PCT application filed Feb. 15, 1979, Ser. No. 30,242

Int. Cl.³ E05B *55/04*

U.S. Cl. 70—484 **20 Claims**



1. A lock assembly for a door (10) for a vehicle having a latch structure (16) for latching and locking said door (10), aligned first and second handle means (20,18) extending outwardly and inwardly from opposite sides of said door (10), locking means (22) carried by said door (10) and having an operator-manipulated lever (22) movable between a locked and an unlocked position, cam means (108) operatively connected to said lever (22) and having one portion (110) engaging with a segment (42) of the first of said handle means (20) for preventing said first handle means (20) from being turned when said lever (22) is in the locked position, said cam means (108) having a second portion (109) engaging with a segment (60) on said second handle means (18) when said lever (22) is in said locked position, said second handle means (18) moving said segment (60) against said second portion (109) of the cam means (108) to simultaneously move the first portion (110) of the cam means (108) out of engagement with the first handle means (20) and to move the lever (22) to the unlocked position, said segments (42,60) of said first and second handle means (20,18) being aligned to engage one another when said first

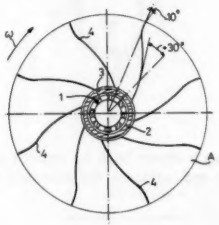
handle (20) is moved, and means (57) for connecting said second handle means (18) to said latch structure (16).

4,277,965

CENTRIFUGAL SHOTTING TURBINE

Leon Rutten, Liege, Belgium, assignor to Cockerill, Seraing, Belgium

Continuation-in-part of Ser. No. 962,190, Nov. 20, 1978, abandoned. This application Jul. 24, 1979, Ser. No. 60,167
Claims priority, application Belgium, Nov. 24, 1977, 46239
Int. Cl.[3] B24C 3/24
U.S. Cl. 72—53 6 Claims



1. A centrifugal shotting turbine comprising:
a pair of parallel spaced flanges having a common central axis perpendicular to the surfaces thereof, each of said flanges having a plurality of radial grooves extending to the outer rim of said flanges on the inside surface thereof;
a shot delivery device interposed between said flanges and coaxial with said central axis;
a plurality of bearing pins, one of said pins being located in each of said radial grooves at the end remote from said central axis;
a plurality of springs, one of said springs being located in each of said radial grooves at the end nearest said central axis;
a plurality of blades each having a pair of longitudinal fillets extending from opposite edges thereof, the working face of each of said blades having a longitudinal profile which is convex adjacent said delivery device and concave at greater radial distances from said delivery device, the radial fillets on each of said blades fitting into corresponding grooves on said flanges between said bearing pins and said springs, the pressure of said springs securely holding said blades in position between said flanges, said blades being easily replaced and being shaped so as to project shot at a high rate of ejection in a concentrated jet.

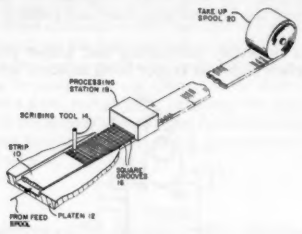
4,277,966

METHOD OF MANUFACTURING A FORAMINOUS PLATE

Werner R. Rambauske, Carlisle, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 4, 1979, Ser. No. 45,525
Int. Cl.[3] B23P 17/00, 25/00; B21C 47/04
U.S. Cl. 72—148 3 Claims

1. The method of fabricating a channelplate with a plurality of foramina extending therethrough, each one of such foramina defining an optical path, such method comprising the steps of:
(a) scribing a strip of a metallic foil to form a plurality of parallel indentations across the width of such strip, the number of such identations being equal to the desired number of foramina, each having a length equal to the width of such foil;
(b) treating the surfaces of the plurality of indentations and the strip to attain a desired optical characteristic of the walls of each one of the foramina; and
(c) winding the treated strip on a bobbin of appropriate shape finally to form a coiled channelplate with foramina defined by said parallel indentations extending there-



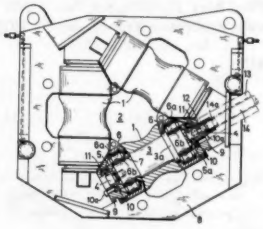
through, such foramina being the only openings in such plate for the passage of optical energy therethrough.

4,277,967

PUSH BENCHES

Karl-Hans Staat, Bad Homberg/Ratingen; Theodor Zacharias, Meerbusch, and Bernhard Terdenge, Düsseldorf, all of Fed. Rep. of Germany, assignors to Kocks Technik GmbH & Co., Düsseldorf, Fed. Rep. of Germany

Filed Jan. 31, 1979, Ser. No. 958,808
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753267
Int. Cl.[3] B21B 13/10
U.S. Cl. 72—224 6 Claims



1. A push bench for the production of tubular blooms having roller stands arranged axially one behind the other along a pass line for said tubular blooms, a plurality of rollers rotatably journalled at each roller stand, defining a sizing pass, said rollers being axially movable relative to the pass line, means at each rollstand acting on said rollers selectively fixing them axially to prevent axial play, coupling means engaging said rollers for transmitting torque thereto when said rollers are fixed axially, and drive means selectively driving said coupling means and rollers.

4,277,968

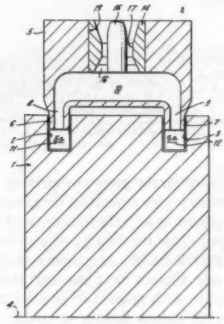
FORMING OF MATERIALS BY EXTRUSION

John A. Pardoe, Lytham St. Annes, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Mar. 6, 1978, Ser. No. 883,663
Claims priority, application United Kingdom, Mar. 16, 1977, 11042/77; Nov. 29, 1977, 49691/77
Int. Cl.[3] B21C 23/22, 23/30, 23/02, 25/02
U.S. Cl. 72—262 7 Claims

1. Apparatus for the forming of materials by extrusion, comprising a rotatable wheel member having an endless groove therein, a stationary shoe member overlying part of the length of the groove and having a portion which projects into said part of the length of the groove and is of a width substantially equal to that of the groove so as to form a passageway there-

with, a stationary abutment member associated with the shoe member and projecting into the groove so as to block the downstream end of the passageway, characterised by the improvement that the wheel member has at least one endless groove in its periphery, arranged in parallel planes where more than one groove is provided, the shoe member has as many



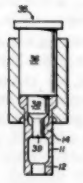
projecting portions as grooves, each projecting portion engaging a respective groove, a duct leading from the passageway formed by the shoe member with each groove, through the respective projecting portion into a single chamber formed in the shoe member, and at least one die orifice extending from the chamber to the exterior of the shoe member.

4,277,969

METHOD OF COLD FORMING TUBES WITH INTERIOR THICKER WALL SECTIONS

Joseph A. Simon, 237 Lothrop, Grosse Pointe Farms, Mich. 48236

Filed Oct. 24, 1979, Ser. No. 87,741
Int. Cl.³ B21C 25/06
U.S. Cl. 72—266 **3 Claims**



1. A process for extruding a thin wall metal tube having an integral inwardly extending, annular, ring-like thickened portion, comprising the steps of:

positioning a relatively short, tubular blank within an open ended, tubular die having an inlet end through which the blank is inserted and an opposite extrusion end formed by an annular, inwardly extending shoulder forming a die extrusion throat, through which the blank is extruded;

inserting a first punch into the die inlet end, with the punch having a portion closely fitted within the die and having an annular ram shoulder engaged against the free, trailing end of the blank, and with the punch also having a punch extension closely fitted within the blank interior wall and extending through the blank to the die throat, with the punch ram shoulder, punch extension, blank and die throat all being arranged co-axially with each other;

moving the first punch towards the die throat while its extension portion is positioned within the die throat to thereby extrude the leading part of the blank through the space between the die throat and first extension to form a wall tube portion of pre-determined length;

removing the first punch from the die and inserting a second punch within the die in its place, with the second punch having a first extension portion corresponding in diameter to the extension portion of the first punch, and a second extension portion whose O.D. is smaller than the O.D. of the extension portion of the first punch;

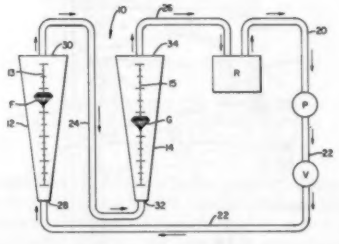
moving the second punch axially towards the die throat to initially position its second extension within the die throat to extrude a ring-like inwardly thickened formation within the tube, and thereafter, as the punch movement continues, positioning its first extension portion within the die throat to again extrude the tube wall until a pre-determined tube length is reached.

4,277,970

APPARATUS AND METHOD FOR SPECIFIC GRAVITY MEASUREMENT

Paul R. Dawson, 256 Renwick Dr., Ithaca, N.Y. 14850, and Gregg W. Dawson, 1160 S. Madison St., Denver, Colo. 80210

Filed Feb. 6, 1980, Ser. No. 119,033
Int. Cl.³ G01N 9/08, 9/22
U.S. Cl. 73—32 R **24 Claims**



1. Apparatus for measuring the specific gravity of an object, comprising:

an upright test chamber having a lower end and an upper end, said test chamber adapted for receiving said object to be measured;

a fluid circuit interconnecting said upper and lower ends of said test chamber;

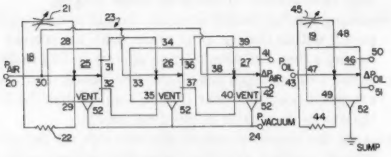
circulating means associated with said fluid circuit for circulating a viscous fluid through said test chamber in a direction from said lower to said upper end;

regulating means associated with said fluid circuit for adjusting the rate of flow therethrough; and monitoring means associated with said fluid circuit for measuring the rate of flow therethrough.

4,277,971
FLUIDIC OIL VISCOMETER

Tadeusz M. Drzewiecki, Silver Spring, and Richard M. Phillippi, Highland, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 10, 1980, Ser. No. 110,958
Int. Cl.³ G01N *11/04, 33/30*
U.S. Cl. 73—55 **10 Claims**



1. A method of detecting the change in viscosity of a first fluid independent of temperature including means for measuring the viscosity of the first fluid to be monitored relative to the viscosity of a second fluid including the steps of:

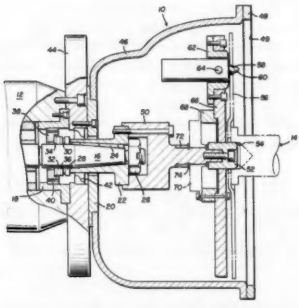
calibrating the means for measuring so that the viscosity vs. temperature curve of the first fluid is substantially the same as the viscosity vs. temperature curve of the second fluid; and

monitoring the relative change in viscosity of the monitored fluid by the difference between the two fluid viscosities such that the relative change in viscosity is independent of temperature.

4,277,972
ENGINE DYNAMOMETER

Gerald J. Wolschlager, Rochester, Mich., assignor to Modular Data Systems, Inc., Utica, Mich.

Filed Dec. 6, 1979, Ser. No. 100,808
Int. Cl.³ G01L *3/20*
U.S. Cl. 73—862.16 **4 Claims**

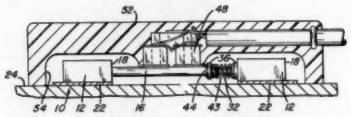


1. In a dynamometer for testing the operation of an engine, the dynamometer having a non-rotating housing in which is rotatably mounted an input shaft adapted to be connected through adapter means to a rotating output element of the tested engine to be rotatably driven thereby, the improvement which comprises axial thrust absorbing means interposed between the adapter means and the dynamometer housing and so positioned and mounted so that any excessive axially-directed loads applied toward the dynamometer from the engine are transmitted through said thrust absorbing means directly into the dynamometer housing rather than onto the dynamometer input shaft.

4,277,973
VIBRATORY WIRE STRAIN GAGE

Ivor Hawkes, 5 Willow Springs La., Hanover, N.H. 03755

Continuation-in-part of Ser. No. 966,324, Dec. 4, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,696
Int. Cl.³ G01L *1/10*
U.S. Cl. 73—862.41 **18 Claims**

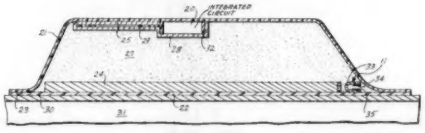


1. A vibratory wire strain gage comprising: an elongated hollow tube; a vibratory wire extending longitudinally through said tube and in spaced apart relationship with the inner periphery thereof; spaced anchor blocks adjacent each axial end of said tube, said anchor blocks supporting said tube adjacent respective axial ends thereof in a manner that said tube is longitudinally slidable with respect to at least one of said anchor blocks; securing means rigidly securing the respective axial ends of said wire to adjacent ones of said anchor blocks; selectively adjustable biasing means having an axial stiffness thereof substantially less than the axial stiffness of said wire; and said biasing means being operable to bias at least one of said anchor blocks away from the other of said anchor blocks to selectively vary the tension in said vibratory wire.

4,277,974
TIME-TEMPERATURE INDICATION

Lawrence J. Karr, 1349 W. Washington Blvd., Venice, Calif. 90291, and Stanton H. Kaye, 108 S. Mansfield, Los Angeles, Calif. 90036

Filed Jul. 12, 1979, Ser. No. 56,955
Int. Cl.³ G01K *3/04*; G04F *13/04*; G01R *11/44*
U.S. Cl. 73—339 R **12 Claims**



1. An apparatus for indicating the deterioration of a packaged perishable product that deteriorates at a rate approximately exponentially related to the temperature of the product, the apparatus being adapted to be attached to the package in which said product is contained and comprising:

(a) a substantially planar, label-like, galvanic cell having a consumable electrode, an electrolyte, and a patterned mask positioned between said electrode and the electrolyte and protecting a predetermined portion of said electrode against galvanic erosion to provide a predetermined visual indication when the time integral of the instantaneous currents passed through said cell amounts to a predetermined coulombic total, and

(b) circuit means including a semiconductor device having a temperature dependent current characteristic connected to said cell for controlling the through-put current in a manner such that the instantaneous current amplitude at any given time is a direct and substantially exponential function of the temperature at such time, with said function substantially corresponding to the time rate of deterioration as a function of temperature characteristic of the perishable product to which the apparatus is to be attached, whereby said through-part current consumes that portion of the consumable electrode not protected by said

patterned mask, exposing the electrolyte to view through said electrode and providing a visual indication corresponding to the pattern of said mask.

4,277,975

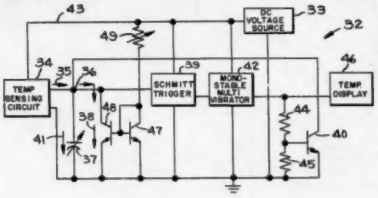
DIGITAL THERMOMETER

Clinton L. Pinkham, New Hartford, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,841

Int. Cl.³ G01K *7/24*

U.S. Cl. 73—362 AR **11 Claims**



1. Apparatus for sensing and displaying temperature comprising:

(a) a circuit including a temperature sensor for providing a first current related to the temperature at the site of the sensor;

(b) means for generating a predetermined current;

(c) a capacitor responsive to a second current having a value proportional to the difference between the first current and the predetermined current for generating a voltage;

(d) means responsive to the generated voltage for discharging the capacitor to a predetermined level when the voltage exceeds a selected reference level and for providing a signal indicating each time the voltage exceeds the reference level, whereby said signal is periodic with a frequency related to temperature sensed; and

(e) display means responsive to the frequency of said signal for providing a numerical indication of the temperature sensed.

4,277,976

PROCESS AND APPARATUS FOR MEASUREMENT OF NONUNIFORMITY OF MASS IN A ROTOR

Richard Mueller, Lynchburg, Va., and Guenther Himmler, Darmstadt, Fed. Rep. of Germany, assignors to Gebr. Hofmann GmbH & Co. KG, Darmstadt, Fed. Rep. of Germany

Filed Jul. 6, 1979, Ser. No. 54,947

Int. Cl.³ G01M *1/22*

U.S. Cl. 73—457 **15 Claims**

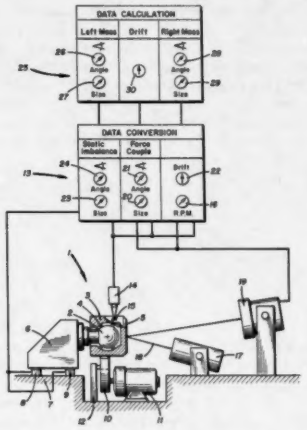
9. An apparatus for measuring the nonuniformity of mass of a gyro rotor, the gyro rotor having a single bearing, the apparatus comprising:

a radially fixed and spherically yielding pivot; means for mounting the gyro rotor in the pivot; means for rotating the mounted rotor to a predetermined rotational speed;

first means operatively associated with the pivot for sensing the magnitude of a force exerted on the pivot by the rotating rotor;

second means for sensing movement of a surface of the rotating rotor at two different times; and

conversion means responsive to said first and said second means for determining the static imbalance, force couple,



and drift of the gyro rotor resulting from the nonuniformity of its mass.

4,277,977

METHOD AND APPARATUS FOR INSPECTION OF CERAMIC PARTS FOR DEFECTS

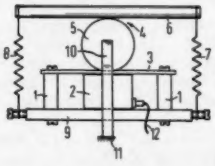
Karl Lubitz, Ottobrunn; Jeffrey M. Drew, and Werner P. Schuhmann, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 11, 1979, Ser. No. 47,476

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1978, 2834695

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—587 **6 Claims**



1. A method for inspection of semiconductor ceramic structural members for defects therein comprising the steps of:

applying a test voltage to the member to be inspected, and simultaneously subjecting the member to acoustic emission analysis

whereby structural damage resulting from the application of said test voltage, and the presence of pre-existing damage are determined by examination of acoustic pulse output.

4,277,978

ADAPTIVE INPUT CIRCUIT

Charles M. Puckette, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 17, 1980, Ser. No. 112,852

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—632 **18 Claims**

1. A circuit for variably adapting the dynamic range of an electrical signal to the predetermined dynamic range of a

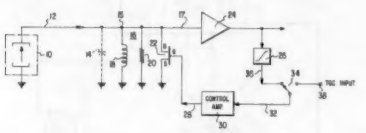
signal receiver, said signal being derived from an ultrasonic signal source for application to the input of said receiver;

said circuit comprising:

a filter coupled to said receiver input, said filter including at least resistive and inductive filter elements adapted to provide a frequency pass band centered substantially on a predetermined operating frequency of the source signal;

means for coupling said source signal to said filter;

an equivalent capacitance presented to said filter substantially in parallel with the latter, said equivalent capacitance including at least the combined capacitance of said source and said coupling means;



said inductive filter element being selected to resonate with said equivalent capacitance substantially at said predetermined operating frequency;

field effect device means including gate means and a drain-to-source path, said drain-to-source path being connected substantially in shunt with said receiver input; and

means for applying a control signal to said gate means adapted to vary the resistance of said drain-to-source path;

whereby said control signal is adapted to limit the amplitude of the signal applied to said receiver input substantially to the dynamic range of said receiver.

4,277,979

SCAN-CONTROL APPARATUS FOR PULSE-ECHO ULTRASONIC IMAGING SYSTEM INCORPORATING OSCILLATED TRANSDUCER

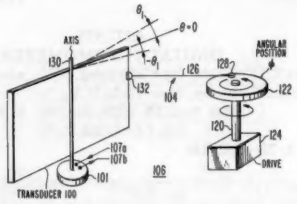
David H. R. Vilkomerson, Princeton, N.J., and Reuben S. Mezrich, Miami, Fla., assignors to RCA Corporation, New York, N.Y.

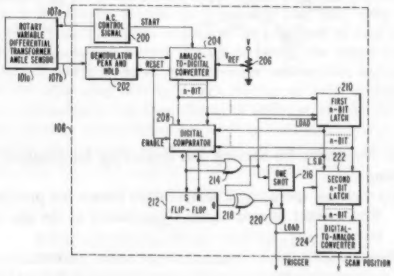
Filed Nov. 23, 1979, Ser. No. 96,825
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—633 **5 Claims**

1. In a pulse-echo ultrasonic wave energy imaging system comprising (1) a mechanically-oscillated electro-acoustic transducer responsive to the energization thereof for generating a scanning beam of pulsed ultrasonic wave energy that is propagated through a given liquid toward a remotely-located given structure to be insonified, said structure returning ultrasonic wave energy echoes propagated through said liquid to said transducer for detection and display on a display device of an image of said insonified structure, wherein said transducer is completely immersed in said liquid and is mounted for angular movement about a given axis; (2) an angle sensor for deriving an output signal which is a predetermined function of the angular position of said mechanically-oscillated transducer, and (3) electronic means responsive to said output signal from said angle sensor for energizing said transducer at each of a group of specified angular positions of said transducer during each cycle of oscillation thereof; the improvement therein:

wherein said angle sensor comprises an analog angle sensor immersed in said propagation liquid and directly coupled to said transducer for deriving a continuous output signal having a value which is substantially proportional to the then-existing angular position of said oscillated transducer, and

wherein said electronic means comprises an analog-to-digital converter for producing a multi-bit digital output of the angular position of said oscillated transducer in which the least significant bit corresponds with a predetermined angular incremental change in the angular position of said oscillated transducer, first means for periodically applying a sample of said analog sensor output signal to the input of said analog-to-digital converter at a rate sufficiently high that said analog angle sensor output signal is sampled at least once during each successive angular incremental change of said oscillated transducer, and second means operative during the occurrence of a certain one of the two half-cycles of each oscillation of said transducer for energizing said transducer in response to the occurrence





of each successive odd value of the least significant bit of the digital output of said analog-to-digital converter and operative during the occurrence of the other one of the two half-cycles of each oscillation of said transducer for energizing said transducer in response to the occurrence of each successive even value of the least significant bit of the digital output of said analog-to-digital converter.

4,277,960

APPARATUS AND METHOD FOR INDICATING SOUND LEVELS

Montgomery R. Coats, Oklahoma City, Okla.; Turner C. Pendleton, deceased, late of Oklahoma City, Okla., and Reine H. Pendleton, 1910 N. Indiana, Oklahoma City, Okla. 73106, assignors to Reine H. Pendleton, Oklahoma City, Okla.; Claude A. Pendleton, Dallas, Tex. and Sue Pendleton Coats, Edmond, Okla., a part interest

Filed Mar. 12, 1979, Ser. No. 19,608
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—646 **25 Claims**

1. An apparatus for detecting sound, comprising:

means for receiving a sound pressure wave and converting said pressure wave into a proportionate primary electrical signal;

first amplifier means connected to said receiving means for amplifying said primary electrical signal;

second amplifier means connected to said first amplifier means for further amplifying the amplified signal from said first amplifier means;

rectifier means connected to said second amplifier means for rectifying said further amplified signal;

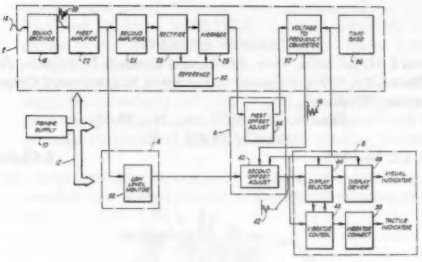
averaging means connected to said rectifier means for obtaining a signal having a magnitude which is an average of the magnitude of the rectified signal;

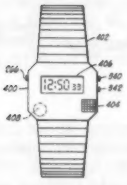
voltage-to-frequency converter means connected to said

averaging means for converting said averaged-magnitude signal to an electrical signal having a frequency proportionate to the magnitude of said averaged-magnitude signal;

means connected to said first amplifier means for monitoring the magnitude of said first amplified signal;

means connected to said voltage-to-frequency converter





means and to said monitoring means for adjusting said signal from said voltage-to-frequency converter means to thereby obtain an adjusted quantifiable signal;

means connected to said adjustment means for quantifying and displaying said adjusted quantifiable signal; and

means connected to said voltage-to-frequency converter means, said adjustment means, and said display means for controlling the timing of the operations thereof.

4,277,981

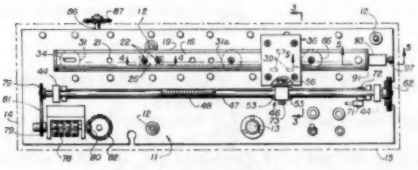
LEAD SCREW ACTUATED FLUID GAUGE

Gene Glassey, San Diego, Calif., assignor to Fluid Data Systems, San Diego, Calif.

Continuation-in-part of Ser. No. 100,937, Dec. 6, 1979. This application Feb. 11, 1980, Ser. No. 120,694

Int. Cl.³ G01L *9/14*

U.S. Cl. 73—701 **9 Claims**



1. In a pressure-responsive gauge of the type having a base, a balance beam, a fulcrum pivotally supporting said beam relative to said base, pressure-responsive means interposed between said base and said beam arranged to tilt said beam, a poise slideable along said beam to counterbalance the force of said pressure-responsive means, drive means for moving said poise, and a servo-motor arranged to actuate said drive means, an armature attached to one end of said beam, a differential transformer excited by said armature, an electric circuit including said transformer and said servo-motor functioning to move said poise to null said transformer and a read-out driven by said servo-motor, the improvement wherein said drive means comprises a lead screw parallel to the neutral position of said beam, means interconnecting said screw and said servo-motor, a carriage in threaded engagement with said screw, mounting means mounting said carriage for movement parallel to said beam, and transmission means for transmitting movement of said carriage to said poise, and wherein said guage further comprises temperature responsive means to compensate for temperature variations in a vertical sense comprising a spacer between said pressure-responsive means and said base of a different material than said pressure-responsive means, said spacer and said pressure-responsive means having dimensions and coefficients of expansion such that they expand to the same extent as said fulcrum, a clamp adjustably clamping said transformer vertically relative to said base, the materials of said clamp, armature and spacer being such that the position of the midpoint of said armature relative to the null point of said transformer remains fixed despite temperature variations.

4,277,982

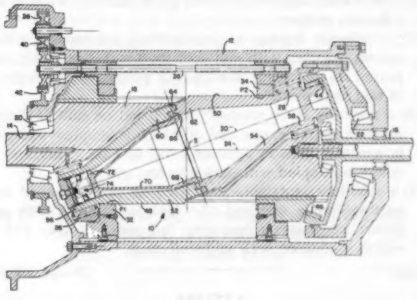
TORQUE TRANSMITTING BODY FOR TRACTION DRIVE TRANSMISSIONS AND NORMAL FRICTION FORCE DEVELOPING METHOD

Yves J. Kemper, Birmingham, Mich., assignor to Vadetec Corporation, Troy, Mich.

Filed Sep. 21, 1979, Ser. No. 77,833

Int. Cl.³ F16H *15/16, 55/34*

U.S. Cl. 74—191 **10 Claims**



1. In a continuously variable power transmission including a body having a pair of cone members arranged with the respective large diameter ends thereof adjacent to each other to define oppositely convergent, cone-like rolling surfaces of revolution about one axis and to which torque is transmitted by rolling frictional engagement of said cone-like surfaces at two points of contact with complementing rolling surfaces of revolution about another axis inclined with respect to and intersecting said one axis so that the normal force by which said rolling surfaces are retained in contact may be developed by axial separation of said cone-like surfaces, the output load of the transmission being driven by torque so transmitted to said body, the improvement comprising:

telescopic means connecting said cone members for relative rotary and axial movement;

means connecting the output load of the transmission to one of said cone members; and

means for developing an axial separating force on said cone members in response to a torque differential between said cone members.

4,277,983

INTERLOCKING DEVICE FOR SHIFT ROD IN POWER TRANSMISSION

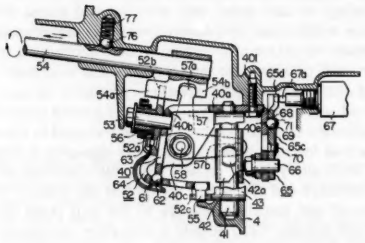
Seiji Izumi, Kitaoizumi, and Kiyokazu Ookubo, Wako, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1979, Ser. No. 70,990

Claims priority, application Japan, Sep. 4, 1978, 53-107472; Sep. 4, 1978, 53-120516[U]

Int. Cl.[3] G05G *5/10, 9/18*

U.S. Cl. 74—477 5 Claims



1. An interlocking device for a power transmission operating rod in a power transmission mechanism of a type, wherein the sliding direction of a shift fork shaft intersects with the axial line of the power transmission operating rod, said interlocking device comprising, in combination:

(a) a supporting frame in the form of a letter "U" fitted at the lower part of a power transmission casing;

(b) a guide shaft fixed on said U-shaped supporting frame with the axis thereof being disposed in the same direction as the sliding direction of said shift fork shaft;

(c) a shift shaft supported on said guide shaft in a slidable and rotatable manner;

(d) a selector having an interlocking mechanism which rotates together with said shift shaft and is rotatably supported on said guide shaft which permits slid-movement of said shift shaft;

(e) a selection lever rotatably supported on said U-shaped supporting frame, one end of which is coupled with said power transmission operating rod and the other end of which is coupled with said selector; and

(f) a shift lever rotatably supported on said U-shaped supporting frame, one end of which is coupled with said power transmission operating rod and the other end of which is coupled with said shift shaft.

4,277,984

STEERING SHAFT SUPPORT DEVICE

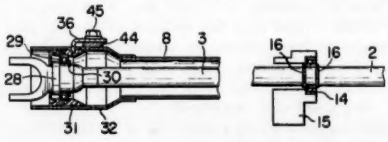
Akio Numazawa, Nagoya; Taketo Matoba, and Makoto Kida, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 31, 1979, Ser. No. 44,191

Claims priority, application Japan, Feb. 26, 1979, 54/20778; Feb. 26, 1979, 54/20779

Int. Cl.[3] B62D *1/18;* F16C *35/077*

U.S. Cl. 74—492 7 Claims



1. A steering shaft support device, comprising a steering shaft accommodated within a column tube, an elongated slot formed in a predetermined axial length in said column tube, a holding member mounted on said column tube for supporting said steering shaft through a bearing, said holding member being extended radially outward of said column tube through said slot, and fixing means for fixing said holding member on the outer periphery of said column tube.

4,277,985

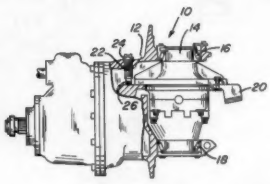
CARBON SPACER

Edward M. Kostello, Troy, Mich., and Kenneth L. Schulte, Jr., Plain City, Ohio, assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 27, 1979, Ser. No. 79,407

Int. Cl.[3] F16H *1/40*

U.S. Cl. 74—713 8 Claims



1. A power transmitting device comprising: a housing; a shaft rotatably mounted in said housing; a ring gear mounted on said shaft for rotation therewith, said ring gear being capable of deflecting in an axial direction under load; a stop member fixed to said housing and having one end adjacent one side of said ring gear, said stop member limiting axial deflection of said ring gear; a spacer of a predetermined thickness attached to the end of said stop member adjacent said ring gear and abutting said ring gear; said spacer being formed of a material capable of wearing away when contacted by said rotating ring gear to provide a gap of said predetermined thickness between said one end of said stop member and said ring gear whereby said one end of said stop member will prevent said ring gear from deflecting axially under load a distance greater than said predetermined distance.

4,277,986

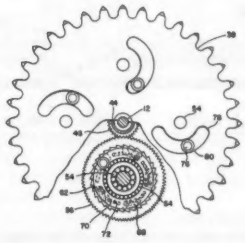
STEPLESS, VARIABLE STROKE DRIVE HAVING A NON-ROTATING CAM

Clive Waddington, Stratford, Conn., assignor to Avco Corporation, Stratford, Conn.

Division of Ser. No. 836,727, Sep. 26, 1977, Pat. No. 4,181,043. This application Sep. 20, 1979, Ser. No. 77,204

Int. Cl.[3] F16H *3/44*

U.S. Cl. 74—750 B 2 Claims



1. Apparatus for selectively transmitting the motion of a first rotating member to a second rotating member comprising:

a support axle mounted on the first rotating member;

a gear ring mounted for rotation on the support axle and being constructed with an annular channel positioned concentric with the support axle, said channel being formed between radially spaced outer and inner circumferential surfaces;

radially inward extending gear teeth spaced about the outer circumferential surface;

a crank ring mounted within the channel on the inner circumferential surface for concentric rotation relative to the gear ring, said ring having a crank arm operatively connected to the first rotating member which imparts a periodic rotation to the crank ring;

a plurality of pawls mounted on the crank ring and resiliently biased radially outward to engage the gear teeth and drive the gear ring only in a direction consistent with the periodic rotation imparted by the first rotating member; and

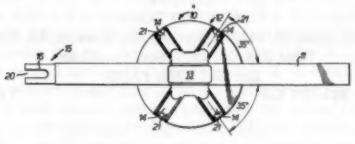
an output member operatively engaging the gear ring to transmit the motion thereof to the second rotating member.

4,277,987

CHAIN SAW SHARPENING APPARATUS

Frederick H. Hyde, Short St., Warwick, Queensland, Australia

Filed Jun. 4, 1979, Ser. No. 45,383
Claims priority, application Australia, Jun. 2, 1978, PD4598
Int. Cl.³ B23D *63/10*
U.S. Cl. 76—25 A **7 Claims**



1. Chain saw sharpening apparatus including, a support member adapted in operation to locate about a saw chain in predetermined relationship thereto and supporting two guide roller assemblies each including a pair of guide rollers disposed at opposite sides of said support member for rotation about axis disposed, when the apparatus is operatively supported about said saw chain, in a plane substantially at right angles to the face of the saw chain supporting bar and substantially parallel to the longitudinal run portions of said saw chain, each said guide roller having a concave peripheral surface, defining a file seat, and said guide roller assemblies being so made and arranged that a file operatively supported on one said pair of guide rollers and seated on respective said concave peripheral surfaces is disposed at an angle of inclination to said supporting bar face equal to the selected cutting edge angle of one set of saw teeth, while the other said pair of guide rollers operatively supports a file in a similar manner at an angle of inclination to said supporting bar face equal to the selected cutting edge angle of the other set of saw teeth.

4,277,988

METHOD OF MANUFACTURING A CONTOURED STAMPING DIE

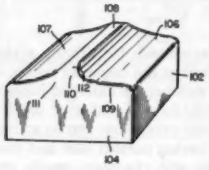
John J. Crowe, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 11,674, Feb. 12, 1979, Pat. No. 4,227,396. This application Apr. 11, 1980, Ser. No. 139,600
Int. Cl.³ B24B *1/00;* **B23C** *3/20;* **B21K** *5/20*
U.S. Cl. 76—107 R **18 Claims**

1. A method for making a contoured die, comprising the steps of:

(a) providing a workpiece having a horizontally extending flat top surface, vertically extending side surfaces, and vertically extending front and back surfaces, with each of said side surfaces being parallel to the other side surface and perpendicular to said front and back surfaces, whereby said workpiece has a rectangular cross-section in plan view over its entire vertical extent;

(b) forming depressions in said workpiece extending across said flat top surface from said front surface to said back surface parallel to said side surfaces of said workpiece, with adjacent depressions being spaced-apart from one another to retain flat top surface portions therebetween of rectangular shape having a transverse dimension d as measured in a horizontal plane containing said flat top surface portions, said depressions being formed with a concave elevational contour of constant radius of curvature R_1 as viewed in a vertical plane perpendicular to said side surfaces of said workpiece and with the forming step



being carried out such that the dimensional ratio of said radius of curvature R_1 to the flat top surface portion transverse dimension d is between 0.375 and 30,000; and

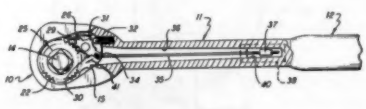
(c) forming smoothly contoured edge surfaces on said workpiece in the regions of intersection of the top surface of said workpiece with the front and back surfaces thereof, including edge surface portions extending between and joining said front and back surfaces with said flat top surface portions each having an inwardly directed elevational contour from a lower extremity adjacent the front or back surface to an upper extremity adjacent the flat top surface portion, as viewed in a vertical plane parallel to said side surfaces of said workpiece and passing through the flat top surface portion.

4,277,989

RATCHET WRENCH HANDLE

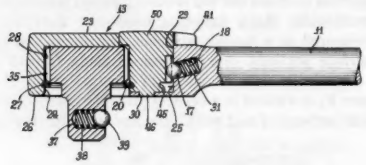
Kurt L. Tracy, Kendrew Rd., Rensselaer Falls, N.Y. 13680

Filed May 1, 1979, Ser. No. 35,103
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—62 **7 Claims**



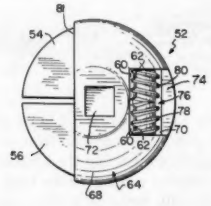
1. A reversible ratchet wrench handle comprising a head portion, a hand grip portion spaced from the head portion, a shank portion rigidly connecting the head and hand grip portions together, a ratchet member in the head portion, a double toothed pawl pivotally mounted in the head portion adjacent the ratchet member, a longitudinally movable switch button on the handle adjacent the hand grip portion, and a longitudinally movable rod element positioned in the shank portion and connecting the switch button to the pawl whereby longitudinal movement of the switch button in one direction operates to move one of the pawl teeth into engagement with the ratchet member and longitudinal movement of the switch button in the opposite direction operates to move the other pawl tooth into engagement with the ratchet member.

4,277,990
RATCHET WRENCH
Roy L. Hall, Hoffman Estates, Ill., assignor to Duro Metal Products Company, Chicago, Ill.
Filed Nov. 14, 1979, Ser. No. 94,213
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—63 **6 Claims**



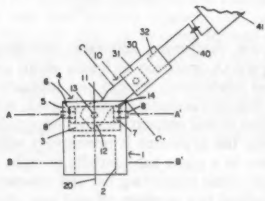
1. A ratchet wrench for driving removable drive sockets having bolt head or nut engaging means, comprising: an elongated handle member, an enlarged housing at one end of said handle member, formed with two internal cylindrical chambers, each closed over at one end by an integral portion of said housing, and having parallel axes and overlapping circumferences whereby said chambers openly communicate at their overlapping areas; one of said chambers having one open end which extends inwardly of an upper wall of said housing and the other of said chambers having one open end which extends inwardly of the bottom wall of said housing; a ratchet pawl member rotatably journaled in said one of said chambers in bearing relation with the walls thereof; a ratchet gear member having a toothed body and an axially depending socket supporting drive tang, rotatably journaled in the other of said chambers in bearing relation with the walls thereof; said pawl member having a pair of arcuately spaced teeth selectively engageable one at a time with the teeth of said gear member, yieldable detent means for maintaining said pawl member in either of two selected operating positions whereby to engage one of said pair of teeth with said gear member to thereby limit ratcheting rotation of the latter in clockwise or counter clockwise directions; and a single retainer means disposed within the confines of said housing and operable for simultaneously locking both said gear and pawl members in their respective chambers.

4,277,991
ADJUSTABLE SOCKET WRENCH
James B. Stubenrauch, 10701 Walmer, Overland Park, Kans. 66211
Filed Nov. 16, 1979, Ser. No. 94,982
Int. Cl.³ B25B *13/16*
U.S. Cl. 81—163 **5 Claims**



1. An adjustable socket wrench head, comprising:
a main body presenting a top surface, a bottom surface, and structure defining an elongated relieved portion, said structure including
a first surface disposed at a vertical level between and in general parallelism with said top and bottom surfaces and presenting an inner end and outer end;
a second surface extending downwardly from said top surface toward said outermost end of said first surface; and
a third surface extending upwardly from said bottom surface toward the inner end of said first surface;
a pair of jaws disposed partially within said relieved portion and extending outwardly beyond said second surface, each jaw having an inner, elongated workpiece-engaging surface;
means for selective, lateral, back-and-forth movement of at least one of said jaws relative to the other jaw for adjusting the spacing between the jaws;
structure defining an opening through said top surface for receiving the drive block of a socket wrench handle,
said workpiece-engaging surfaces and said first, second, and third surfaces cooperatively defining, when said jaws are opened, a first, inner, workpiece-receiving region bounded on four sides and defined by the inner portions of said gripping surfaces, and said first and third surfaces between the open jaws, and a second, open-ended workpiece-receiving region cooperatively defined by the outer portions of said gripping surfaces beyond said second surface, and the portion of said second surface between the open jaws.

4,277,992
JOINTED TOOL
Arthur O. Koltveit, 1410 S. Sterling St., Streator, Ill. 61364
Filed Jun. 26, 1979, Ser. No. 52,450
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—177 UJ **7 Claims**



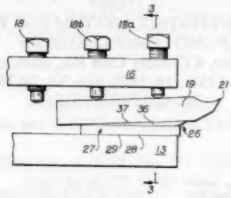
1. A jointed hand tool for use with rotatable, work-piece-contacting tool elements comprising an upper portion for rotatably driving said tool, a lower work-piece contacting portion including a tool element for contacting the work-piece, and a pin-mounted gimbal ring connection joining said upper drive portion and said lower work-piece contacting portion, said gimbal connection between said upper and lower portions being provided by said lower portion having at the top thereof an open-topped tubular section defining an outside ring element of said gimbal connection, and an inside ring element of said gimbal connection is attached to the lower end of said upper drive portion by pin means having an axis located in the same plane as and intersecting at an angle of 90 degrees the axis of the pin means of said gimbal connection connecting said outer and inner ring elements thereof, the lower end of said upper drive portion defining a rectangular periphery and said inner ring element of said gimbal connection having a rectangular opening in the interior thereof into which opening said lower end of said upper drive portion is received and attached by said pin means therefor, whereby, when rotation is imparted to said drive portion, the adjacent walls of said drive portion and said inner ring element abut each other and thereby reduce torque applied to said drive portion-inner ring connection pin means.

4,277,993

"ADJUSTMENT DEVICE FOR TOOL BIT HOLDERS"

George Engels, 551 Taylor Way, Belmont, Calif. 94002

Filed Apr. 4, 1979, Ser. No. 26,882
Int. Cl.[3] B23B *29/06, 29/10*
U.S. Cl. 82—37 1 Claim



1. For use in a lathe of the type having a tool and a tool holder, said tool holder having a base, a plate spaced from said base and clamping means operable for securing said tool in said holder between said base and said plate with the distal tip of said tool extending outward from said tool holder to engage the work, the improvement comprising tool height adjustment means entirely separate from said tool and said tool holder, said adjusting means comprising a first member having a planar first surface and an opposed second surface formed with an arcuate concavity, said first and second surfaces extending the entire length of said first member, parallel sides along the longitudinal edges of said first member extending above said second surface with a first space between said sides, the top edges of said sides being of substantially uniform elevation, and a second member having a planar first surface and an opposed convex second surface of the same radius of curvature as said second surface of said first member, said first and second surfaces of each second member extending the entire length of said second member and being substantially the same lengths as said first and second surfaces of said first member, said members being positioned with their second surfaces in contact and one said first surface fitting against said base, said tool resting on the other said first surface, said second member fitting in said first space and being restrained from lateral movement by said sides, said clamping means bearing against said tool, said second surfaces sliding relative to each other about the common center of the radius of curvature of said second surfaces, said tool being capable of rocking about said center so that the distal tip of said tool rises and falls in elevation relative to said base prior to said clamping means securing said tool in fixed position, said clamping means comprising first and second set screws threaded into said plate, each said set screw having an end in the second space between said plate and said base, each said end engaging said tool, said ends spaced longitudinally of said tool whereby when one said set screw is loosened and the other tightened, the angle between said first surfaces is adjusted and the elevation of said distal tip being correspondingly adjusted, said set screws being the sole means for securing said first and second members in desired positions of adjustment relative to each other and thereby adjusting the elevation of said distal tip relative to each base.

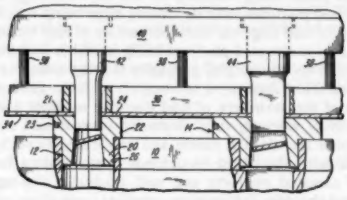
4,277,994

MATRIX ELEMENT

Robert J. Gargrave, 4717 James Hill Rd., Dayton, Ohio 45425

Continuation of Ser. No. 842,526, Oct. 17, 1977, abandoned.
This application May 22, 1979, Ser. No. 41,535
Int. Cl.[3] B26F *1/02*
U.S. Cl. 83—133 2 Claims

1. A device for providing an easily renewable or replaceable matrix operating surface, or a portion thereof, in connection with a die retainer plate, for use in a die assembly wherein a spring loaded plate unit is applied to hold material to be worked to the matrix operating surface comprising, a body including a mounting segment and a matrix segment, said matrix segment being to one end of and oriented to be generally perpendicular to the longitudinal axis of said mounting segment, the surface of said matrix segment remote from said mounting segment constituting a matrix operating surface forming a base for the material to be worked and said mounting segment being formed for a press fit in an opening in a die retainer plate, said matrix segment being laterally extended with respect to the outer periphery of said mounting segment, the lateral extension of said matrix segment providing a load accommodating portion thereof having one surface for bearing abutment to the adjacent surface of the die retainer plate to which the device is applied, said one surface of said matrix



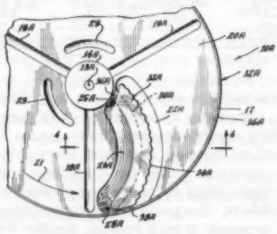
segment being parallel to said matrix operating surface and arranged to directly transmit loads applied to material thereon into and through the die plate, said lateral extension of said matrix segment having a depth to substantially displace said matrix operating surface from the surface of the die retainer plate to which it is applied and being constructed and arranged to provide for a selective displacement of said matrix operating surface toward said one surface as needs require, a peripheral wall portion of said matrix segment having means inserted therein which define the limit to which the matrix operating surface may be displaced toward said one surface of said matrix segment.

4,277,995

ROTARY SLICING TOOL FOR MAKING NEAT, COMPLETE SLICES IN A FOOD PROCESSOR

Carl G. Sontheimer, 14 Gray Oakes La., Greenwich, Conn. 06830

Filed Mar. 5, 1979, Ser. No. 17,450
Int. Cl.[3] B26D *1/147*
U.S. Cl. 83—150 5 Claims



1. A rotary food slicing tool for rotating at a high rate of the order of 1,000 to 2,000 rpm having a rotatable hub with a horizontal disc-like cutting member secured to said hub for rotation therewith in a predetermined direction of rotation about an axis, said disc-like member having a horizontal area with a flange around the perimeter thereof, said horizontal area having a slot therein extending from near said hub out to the periphery of said disc-like member, said disc-like member having an elevated rim behind said slot, and a slicing blade mounted on said elevated rim behind said slot with a cutting edge projecting forward at an elevation above said horizontal area and facing forward toward said slot for slicing food items fed toward said disc-like member, the improvement for pro-

ducing complete and neatly cut slices from such a food item comprising:

(a) a wide elevated platform extending rearwardly from said elevated rim at an elevation above the level of said disc-like member,

(b) said wide elevated platform having a width near said flange of said disc-like member extending concentrically about the axis more than twice the width of the blade,

(c) said slicing blade having its ends contoured to conform with the general contour of the periphery of said disc-like member on one extremity thereof and with the shape of the hub on the other extremity thereof,

(d) said blade being mounted on the forward edge of said elevated platform with its cutting edge being spaced forward of said edge on both extremities of said blade, and

(e) said wide elevated platform being joined to said disc-like member by an integral gradually sloping shoulder being rounded and contoured to conform with the general contour of the periphery of said disc-like member and with said hub, whereby food items fed toward said disc-like member are cleanly, neatly and uniformly sliced by said blade with the sliced food items gently sliding beneath said elevated platform and said gradually sloping contoured shoulder for forming complete, neat slices without any significant smashing, stripping or splattering of food materials.

4,277,996

FORCE APPLICATION APPARATUS, ESPECIALLY FOR SEVERING MATERIALS

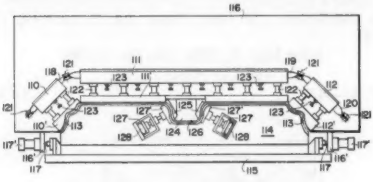
Ernst M. Spengler, Heusenstamm, Fed. Rep. of Germany, assignor to Stanztechnik GmbH R & S, Bergen-Enkheim, Fed. Rep. of Germany

Continuation of Ser. No. 965,907, Dec. 4, 1978, abandoned. This application May 15, 1980, Ser. No. 150,073

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824488

Int. Cl.³ B26D *5/12, 7/10*

U.S. Cl. 83—171 Q **19 Claims**



1. An apparatus for applying force to a three-dimensional work piece, comprising a plurality of work performing means each including rigidly supported frame means forming a plurality of hollow housing members, longitudinal, elastically deformable expansion means having a longitudinal axis, said expansion means being operatively supported in said hollow housing members, elongated force transmission means (24) operatively arranged in each housing member for cooperation with said longitudinal, elastically deformable expansion means, pressure means operatively connected to said longitudinal elastically, deformable expansion means for expanding said expansion means along its entire length to perform a work stroke which is applied to said work piece along a line curved in space, at least two power transmitting rods operatively secured to said elongated force transmission means in a row extending substantially in the same plane as said longitudinal axis, whereby all power transmitting rods are operated in synchronism in said row, said power transmitting rods extending through said housing member, guide means secured to said housing member for guiding said power transmitting rods for a back and forth movement substantially perpendicularly to said housing member, reset means operatively arranged to return said power transmitting rods to a rest position when the pressure in said elastically deformable expansion means is released and support means for operatively supporting said plurality of work performing means in a three-dimensional relationship relative to each other for performing work on a three-dimensional work piece.

4,277,997

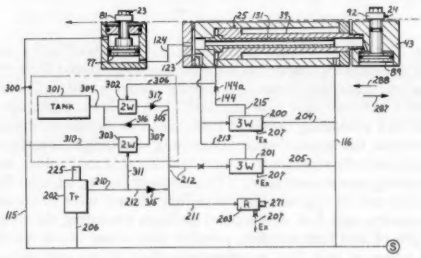
CAPACITANCE CONTROL SYSTEM FOR PNEUMATIC PUNCH PRESS FEEDERS

Albert W. Scribner, 6 Country Club Rd., Darien, Conn. 06820

Filed Mar. 14, 1979, Ser. No. 20,268

Int. Cl.³ B65H *17/36*

U.S. Cl. 83—225 **15 Claims**



1. A pneumatic feeder for intermittently advancing stock into the work station of a punch press or the like; comprising a frame;

stock transport means movably mounted on said frame;

pneumatic motor means for actuating said transport means;

valve means for controlling the operation of said pneumatic motor means;

actuating means for said valve means;

a first control means adapted when actuated to control said valve actuating means so as to cause said stock transport means to partake of a first cycle of movement thereof; and

a second control means adapted when actuated to control said valve actuating means so as to cause said stock transport means to partake of a second cycle of movement thereof;

said second control means including a pneumatic capacitance that is adapted to be charged with pressure fluid and means responsive to the subsequent discharge of said capacitance for causing initiation of said second cycle of movement of said stock transport means.

4,277,998

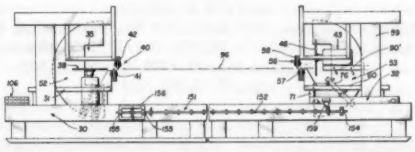
WOOD MEMBER CUTTING APPARATUS

George L. Mayo, Fort Worth, Tex., assignor to Stoddard H. Pyle and Wayne R. Roberts, both of Corvallis, Oreg.

Filed Jan. 16, 1980, Ser. No. 112,530

Int. Cl.³ B27B *5/04*

U.S. Cl. 83—404.1 **16 Claims**



1. A wood member cutting apparatus comprising a base, a first gang of saws and a coacting first wood member conveyor on the base, a carriage on the base movable toward and away from the first gang of saws and first conveyor, a second gang

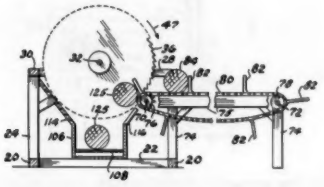
of saws and a coacting second wood member conveyor on the carriage and bodily movable therewith, common driving means for the carriage and for the first and second wood member conveyors, independent vertical adjustment means for each saw in each gang of saws on the base and carriage, and independent 180 degrees rotational movement means for each saw in each gang on the independent vertical adjustment means for each saw, the blades of the saws in each gang rotating around a chord on the saw blade lying in a vertical datum plane common to the saws in each gang.

4,277,999

FIREWOOD SAWMILL

Eldon C. Conner, and E. C. Conner, both of Rte. 1, Foster, Okla. 73039

Filed Sep. 6, 1979, Ser. No. 72,941
Int. Cl.³ B27B *31/00, 5/02*
U.S. Cl. 83—425.3 **1 Claim**



1. A firewood sawmill, comprising:

a rectangular saw frame having base members and upstanding posts supporting saw frame end rails at the respective ends of the frame and defining a forwardly open lateral side for the saw frame;

a saw axle longitudinally overlying and projecting horizontally beyond the respective ends of said saw frame,

said frame having downwardly and inwardly converging side walls terminating in a trough-like base forming a sawed firewood hopper extending longitudinally of the saw frame below said axle;

bearings on said saw frame end rails journalling said axle;

a plurality of equally spaced circular saws coaxially secured to said axle;

an engine having a clutch drivably connected with a drive shaft;

V-belts and pulleys drivably connecting said engine drive shaft with said axle;

manually operated control handles connected with said engine and said clutch;

a feed conveyor frame disposed laterally of said saw frame and projecting into its laterally open side between vertical planes defining the end limits of said saw frame for moving logs to be sawed toward said saws,

said feed conveyor frame comprising a pair of elongated supports horizontally secured at one end portion, respectively, to the respective end of said saw frame, and a pair of standards supporting the other end portion of said supports for supporting the upper limit of the feed conveyor frame below the horizontal plane of said saw axle a distance at least equal to the diameter of logs to be sawed;

a feed conveyor drive shaft journalled by the saw frame connected end portions of said feed conveyor frame supports in parallel laterally spaced relation with respect to said axle;

a feed conveyor idler shaft journalled by the other end portions of said feed conveyor frame supports;

a chain support platform extending horizontally between said feed conveyor drive shaft and said feed conveyor idler shaft in cooperative alignment with the respective said saw;

a plurality of pairs of sprockets secured in spaced-apart relation to said feed conveyor drive shaft in cooperative alignment with the respective said saw;

a like plurality of pairs of feed conveyor idler shaft pulleys journalled by said feed conveyor idler shaft in cooperative alignment with said pairs of sprockets;

a feed conveyor chain entrained around the respective aligned sprocket and idler pulley;

a plurality of outstanding stops secured to the respective said chain;

a feed conveyor driving pulley secured to said feed conveyor drive shaft;

a friction drive pulley secured to said axle in cooperative alignment with said feed conveyor driving pulley;

a flat belt idler pulley pivotally supported by said saw frame for movement in a vertical plane toward and away from said friction drive pulley;

a flat belt entrained around said flat belt idler pulley and said feed conveyor driving pulley in contact with said friction drive pulley;

handle and linkage means for moving said flat belt idler pulley;

a flat belt conveyor extending longitudinally of said trough; and,

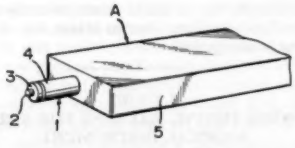
V-belt pulley and angle gear means drivably connecting said axle with said flat belt conveyor for moving sawed firewood toward one end of said frame.

4,278,000

PIEZOELECTRIC TRANSDUCER FOR ELECTRICAL STRING INSTRUMENTS AND PICKUP MEANS COMPRISING THE SAME

Shigeo Saito, and Tsutomu Tsunooka, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Oct. 26, 1979, Ser. No. 88,622
Claims priority, application Japan, Nov. 5, 1978, 53/136027
Int. Cl.³ G10H *3/18*
U.S. Cl. 84—1.16 **13 Claims**



1. A piezoelectric transducer for electrical string instruments comprising a long and flat outer layer of flexible material, a flexible piezoelectric cable being buried therein and having a center electrode, a piezoelectric layer formed on the outer periphery of the said electrode and an outer electrode formed on the outer periphery of the said piezoelectric layer, the material for the said outer layer having a hardness in the range from 85 to 98 as measured by Spring Type Hardness Test according to JIS K 6301 (1975), thereby increasing the stiffness of the piezoelectric transducer.

4,278,001

SELECTIVE KEYER BIASING TO ENHANCE PERCUSSION EFFECT

Ray B. Schrencongost, Park Ridge, Ill., assignor to Marmon Company, Chicago, Ill.

Filed Dec. 26, 1979, Ser. No. 106,725
Int. Cl.³ G10H *1/055, 1/057, 5/07*
U.S. Cl. 84—1.26 **18 Claims**

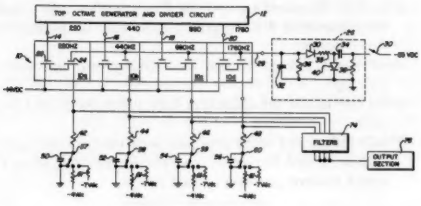
1. A keying system for use in an electronic organ having a top octave generator and divider circuit for providing a plurality of rectangular wave signals at various frequencies and a keyboard for providing a keying signal upon depression of any key, said keying system comprising:

a keying block having a plurality of identical keying sections, each of said keying sections having at least a first and a second semiconductor switching device, all of said semiconductor devices having an input, a control and an output;

a direct current supply having a first potential source and a reference potential, said first potential source being connected to the input of the first semiconductor device of each of said sections;

first conductor means for connecting the output of the first semiconductor device of each section to the input of the second semiconductor device of the same section;

a plurality of load resistors connected individually between the outputs of said second of said semiconductor devices and said reference potential;



circuit means inserted between at least one of said load resistors and said reference potential for controlling the level of potential applied to said at least one of said load resistors;

second conductor means for connecting the rectangular wave signals generated by said top octave generator and divider circuit individually to the controls of one of the semiconductor devices of each section; and

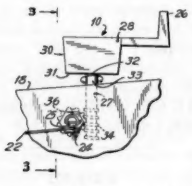
envelope means having a source of keying potential for applying an envelope signal to the controls of the other of said semiconductor devices of each of said sections upon depression of a key on said keyboard whereby the effect of the envelope signal provided to at least one of said keying sections is selectable.

4,278,002

FAST-WIND TUNING MACHINE FOR STRINGED MUSICAL INSTRUMENT

Roger H. Siminoff, 112 Privada Luisita, Los Gatos, Calif. 95030

Filed Aug. 31, 1979, Ser. No. 71,732
Int. Cl.³ G10D *3/14, 7/00;* G05G *1/10*
U.S. Cl. 84—304 **11 Claims**



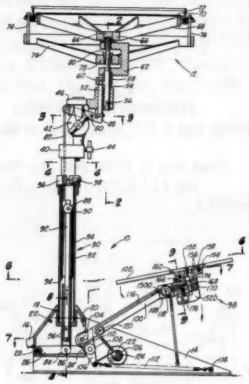
1. Apparatus to facilitate rapid winding or unwinding of a string of a musical instrument comprising in combination, tuning machine means for normally providing tension to said string, said tuning machine means including string retaining means for holding said string, shaft means cooperatively coupled to said string retaining means for movement therewith and knob means connected to said shaft means for applying torque thereto, and crank means integral with said tuning machine means and pivotally connected to said knob means for selectively extending the radius of rotation of said knob means with respect to said shaft means.

4,278,003

PEDAL ADJUSTABLE DRUM

Donald L. Hanson, Sylmar, Calif., assignor to Remo Inc., North Hollywood, Calif.

Filed Aug. 20, 1979, Ser. No. 67,747
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—411 A **23 Claims**



1. Actuating apparatus for adjustable pitch drums comprising

a foot pedal,

a support stand,

a support rod carried by said support stand and adapted to support a drum,

a pivoted lever arm mounted on said support stand,

a push rod engaged with said pivoted lever arm and adapted to be pushed upward thereby,

a "C" shaped bracket having arms slideably received on said support rod, said bracket resting upon said push rod and adapted to engage drumhead tensioning means associated with said drum, and

means connected to said pivoted lever arm and actuated by said foot pedal for pivoting said lever arm against said push rod upon depression of said foot pedal, thereby urging said "C" shaped bracket against said drumhead tensioning means to tension the drumhead of said drum.

4,278,004

PEDALBOARD

Paul A. Klann, P.O. Box 2398, Waynesboro, Va. 22980

Continuation-in-part of Ser. No. 8,213, Jan. 31, 1979, abandoned. This application Jan. 22, 1980, Ser. No. 114,164
Int. Cl.³ G10C *3/14*
U.S. Cl. 84—434 **13 Claims**

1. A pedalboard for an organ comprising front and rear frame means, at least one key disposed between said front and rear frame means, combined support and return spring means for supporting said key in said pedalboard and normally biasing said key into an elevated position comprising an elongated resilient support strip secured to the undersurface of said key substantially adjacent the midportion thereof, said strip diverging downwardly away from said key with the front end of said strip being disposed in spaced vertical alignment with the front end portion of said key, first connecting means securing the forward end of said strip to said front frame means and second

connecting means operatively connecting the rear end of said key to said rear frame means for substantially horizontal movement of the rear end of said key in opposite directions along the length of said key.

4,278,005

CONNECTING BOLT AND COUPLING ELEMENT

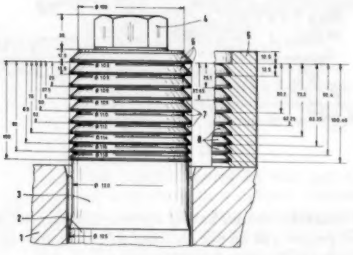
Hans Lachner, Herne, and Werner Boer, Castrop-Rauxel, both of Fed. Rep. of Germany, assignors to Klockner-Werke Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,303

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2825300

Int. Cl.³ F16B *19/00, 21/00*

U.S. Cl. 411—337 **6 Claims**



1. An elongated connecting device which comprises an elongated connecting bolt and a coupling element,

said elongated connecting bolt including a head and a neck, said neck including a gripping portion comprising a plurality of radially-projecting teeth separated by grooves, the spacing between at least some of the teeth and the depth of at least some of the grooves increasing along said gripping portion in a direction towards said head,

said coupling element including a gripping portion comprising teeth separated by grooves, said teeth and said grooves being dimensioned to correspond generally with said teeth and said grooves of said gripping portion of said neck of said connecting bolt so as to form a gripping portion of said coupling element profiled similarly to said gripping portion of said connecting bolt, the spacing between at least some of the grooves relative to the teeth of said gripping portion of said coupling element being slightly greater and becoming increasingly greater from the groove adapted to engage the tooth of the gripping portion of said connecting bolt nearest the head to the groove adapted to engage the tooth of the gripping portion of said connecting bolt furthest from said head.

4,278,006

EXPANSION SHELL ASSEMBLY

John Lobello, Syracuse, N.Y., assignor to The Eastern Company, Naugatuck, Conn.

Continuation of Ser. No. 903,210, May 5, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,577

Int. Cl.³ F16B *13/06, 13/10*

U.S. Cl. 411—47 **1 Claim**

1. A mine bolt expansion anchor assembly comprising, in combination:

(a) a one-piece, malleable iron, expansion shell having,

(i) an annular collar at one end with inner and outer surfaces substantially concentric about a central axis and a flat end surface forming the lower end of said shell;

(ii) four identical expansion fingers extending integrally from said collar on the side opposite said end surface symmetrically about said central axis to a free end of each at the upper end of said shell;

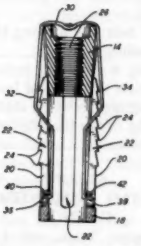
(iii) each of said fingers being laterally spaced from adjacent fingers to provide four open slots at 90° intervals about said shell extending from said free ends to said collar;

(iv) each of said fingers including a toothed outer surface portion extending from said free end for a predetermined part of the total length thereof and a shank portion extending between said toothed surface portion and said collar;

(v) a pair of bridge members extending entirely across two of said slots at 180° to one another adjacent said collar, forming an integral bond between said shank portions of adjacent fingers on each side of said two slots; and

(vi) the surfaces of said bridge members facing inwardly toward said central axis being substantially coplanar with the adjacent surfaces of said shank portions;

(b) a tapered nut having a threaded bore for receiving a mine bolt and placed in engagement with said free ends of said fingers with the small end of said nut oriented toward said



shell collar whereby, as said nut is drawn along said central axis into said upper end of said shell by rotation of the bolt as said shell is restrained against rotation, said toothed portions of said fingers are expanded uniformly outwardly from said central axis; and (c) a bail member of generally U-shaped configuration having a medial portion engaging the large end of said tapered nut and leg portions extending from said medial portion through said two slots and having end portions bent to extend into said slots between said collar and said bridge members, thereby retaining said bail member in engagement with said shell, said bridge members being located adjacent said collar at the lower ends of said slots and spaced a sufficient distance therefrom to accommodate said bail member end portions, the length of said leg portions being less than the combined length of said tapered nut and the distance from said bridge members to said free ends of said fingers, whereby said bail serves to retain said nut within the space enclosed by the free ends of said fingers.

4,278,007

HAND LEVER FOR OPERATING THE WEDGE-TYPE BREECHBLOCK OF AN ARTILLERY GUN

Henning von Seidlitz, Neuss, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 13, 1979, Ser. No. 48,016

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826739

Int. Cl.³ F41F *11/00*

U.S. Cl. 89—24 **6 Claims**

1. Hand lever system for operating the wedge-type breechblock of an artillery gun, comprising

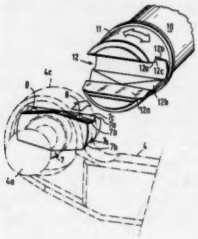
a shaft located at the bottom of the gun and connected with the breechblock;

a hand lever;

a device connecting the shaft and the hand lever, said drive including a socket at the end of said shaft having a two-step locking slot, each step of said two-step locking slot having prismatic surfaces converging toward the side of

the shaft and said slot being open towards the outside at both ends of the slot;

a head at the free end of the hand lever having a two-step bolt with one step of the bolt and the locking slot providing a coupling between the hand lever and the shaft and



the other step of bolt and locking slot having means for releasing the coupling;

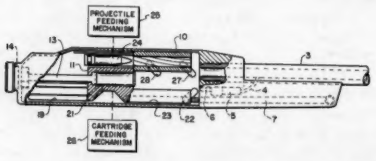
said drive providing a coupling between shaft and hand lever upon actuation of the hand lever and automatically releasing the coupling between shaft and hand lever resulting in dropping of the hand lever upon non-actuation.

4,278,008

SEPARATE LOADING AMMUNITION AUTOMATIC CANNON

William G. Smith, Burns, Tenn., and Ladd Yuhash, Morris Township, Morris County, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 12, 1979, Ser. No. 84,249
Int. Cl.³ F41D 7/02
U.S. Cl. 89—156 **10 Claims**



1. An automatic cannon adapted for separate loading ammunition including a separate projectile and a propellant cartridge, which comprises:

a relatively fixed main barrel;

a floating barrel adapted to receive the projectile of said ammunition;

a moveable chamber adapted to receive the propellant cartridge of said ammunition, said chamber and floating barrel being coaxially positioned with said main barrel in the battery position;

first means for connecting the forward end of said chamber to the rear end of said floating barrel to enable longitudinal movement thereof in unison while permitting lateral movement of the chamber and the floating barrel relative to each other;

second means, responsive to the firing of said cannon, for moving said chamber and said floating barrel in unison rearwardly relative to the main barrel and said chamber and said floating barrel laterally relative to each other, so as to permit the removal of the spent cartridge case from said chamber and the reloading of a new cartridge case into said chamber, and a new projectile into said floating barrel;

third means for automatically reloading said floating barrel with a new projectile and said chamber with a new cartridge case while said floating barrel and said chamber are laterally displaced relative to each other; and

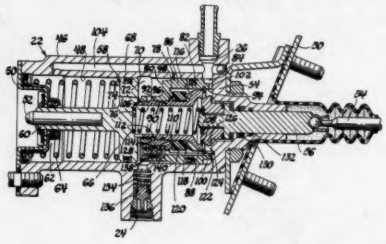
fourth means for returning said chamber and floating barrel to the battery position after reloading.

4,278,009

HYDRAULIC BRAKE BOOSTER

Michael Demido, Troy, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1979, Ser. No. 68,896
Int. Cl.³ F15B 13/14, 13/10
U.S. Cl. 91—47 **2 Claims**



1. In a hydraulic booster having a power chamber defined by a movable power wall on one chamber side and movable valve piston means on the other chamber side,

an output member moved by said power wall,

an exhaust chamber defined by said movable valve piston means and a fixed wall, a hydraulic fluid inlet opening into said power chamber for introducing hydraulic power fluid therein, and a hydraulic fluid outlet opening from said exhaust chamber to conduct hydraulic power fluid therefrom,

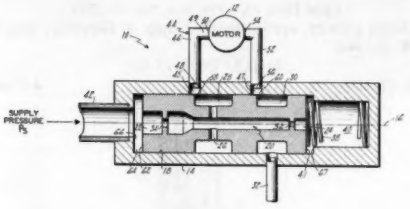
a control valve downstream of said hydraulic fluid inlet and upstream of said hydraulic fluid outlet, said control valve including a valve seat on said valve piston means and a valve control member movable in said exhaust chamber and cooperating with the valve seat to control hydraulic fluid flow from said power chamber to said exhaust chamber, and an input member mounting said valve control member and movable to control booster operation, the improvement comprising:

said valve piston means including a valve seat portion and a valve housing portion, said valve seat portion being sealingly and reciprocably received in said valve housing portion for movement relative thereto in directions toward and away from said power wall and said input member, first and second stop means on said valve housing portion respectively limiting movement of said valve seat portion relative to said valve housing portion toward said input member and toward said power wall, and a compression force transmitting cushion member positioned in force transmitting relation between said valve housing portion and said valve seat portion and yieldably permitting movement of said valve seat portion relative to said valve housing portion in the direction towards said power wall during booster hydraulic power operation in accordance with the amount of booster power pressure in said power chamber, said valve seat portion having a net effective area exposed to power pressure in said power chamber so that the power pressure urges the valve seat portion toward said power wall, said second stop means being engaged by and stopping movement of said valve seat portion relative to said valve housing portion at a predetermined power pressure in said power chamber controlled by the yield characteristic of said cushion member.

4,278,010
FLUID FLOW REGULATOR VALVE

Karl H. Wallischeck, Fairfield, Conn., and James H. Smith, Springfield, Pa., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 23, 1979, Ser. No. 60,092
Int. Cl.³ F15B *13/042*
U.S. Cl. 91—420 **6 Claims**



1. In combination with a fluid actuated prime mover having a fluid inlet and a fluid outlet, a fluid flow regulator adapted to control fluid flow through said fluid actuated prime mover and comprising:

(A) a hollow cylinder,

(B) a control fluid conduit having an inlet and an outlet communicating with the hollow cylinder interior, and a central portion joining the control conduit inlet to the inlet of said fluid actuated prime mover under control and the outlet of said fluid actuated prime mover back to the control conduit outlet,

(C) a spool positioned within said cylinder for reciprocation therewithin and being selectively shaped to simultaneously establish the area of both the inlet and the outlet of said control fluid conduit, said spool defining opposed pressure chambers with said cylinder, means biasing said spool towards said control fluid conduit inlet,

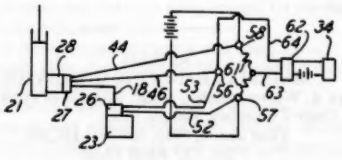
(D) said spool having a central fluid passage therein connected to said control fluid conduit so that the fluid which passes through the spool central passage is directed therefrom through said control fluid conduit and back to said hollow cylinder, said central fluid passage connecting said opposed pressure chambers,

(E) said central passage having a sensor orifice therein so that as flow through the central passage and hence the control fluid conduit varies, the pressure drop across the sensor orifice varies to reposition the spool and thereby simultaneously vary the area of the inlet and the outlet of the control fluid conduit to maintain a constant rate of fluid flow through said control fluid conduit and said fluid actuated prime mover.

4,278,011
AUTOMATIC HYDRAULIC SHUT-OFF SYSTEM

Donald J. Parquet, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Division of Ser. No. 803,686, Jun. 6, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,564
Int. Cl.³ F15B *13/044*; F16K *17/22*
U.S. Cl. 91—445 **1 Claim**

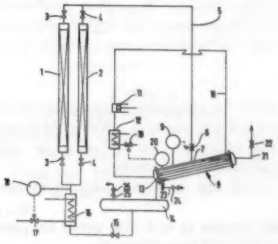


1. A hydraulic safety system comprising a valve housing having fluid passageway therein and a valve spool closure movably disposed therein for opening and closing said passageway, a hydraulic valve unit, a hydraulic responsive apparatus for applying a mechanical force in response to hydraulic pressure applied to said apparatus, hydraulic lines connected between said valve housing and said valve unit and said apparatus, a hydraulic flow sensor fluid-flow connected with each of said valve housing and said valve unit for detecting fluid flow between said valve housing and said valve unit, said sensors each including a movable piston exposed to fluid flow and movable in response thereto, an electrical wheatstone bridge circuit, said sensors each including electrical potentiometer elements consisting of an electrical contact connected with and movable with each said piston and an electrical wiring of said bridge circuit on which said contact is in sliding contact and with said electrical elements arranged to produce an electric resistance in accordance with the flow of fluid through said sensors, and a solenoid unit electrically connected with said electrical elements and operatively associated with said valve spool closure for positioning said valve spool closure in accordance with the differences in the electrical resistance produced by said elements.

4,278,012
PLANT FOR THE EXTRACTION OF HOPS BY EXTRACTION WITH LIQUID CARBON DIOXIDE

Alfred G. Wheldon, and Peter E. Cockerill, both of Dagenham Dock, England, assignors to The Distillers Company (Carbon Dioxide) Limited, Reigate, England

Division of Ser. No. 898,246, Apr. 20, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,687
Claims priority, application United Kingdom, Apr. 29, 1977, 18056/77
Int. Cl.³ C12C *3/00*
U.S. Cl. 99—278 **11 Claims**



1. A plant for the preparation of an extract of hops by extraction with liquid carbon dioxide, said plant comprising an extraction chamber arranged to contain hops to be extracted, an inlet and an outlet of said extraction chamber; a compressor for compressing carbon dioxide gas; a cooler; a heat exchanger including a primary path for a warmer medium to be cooled said primary path having an inlet and an outlet, and a secondary path for a cooler medium to be warmed, said secondary path having an inlet and an outlet; means connecting said inlet of said secondary path of said heat exchanger to said outlet of said extraction chamber whereby a stream of hop extract dissolved in liquid carbon dioxide emerging from said outlet of said extraction chamber is introduced into said secondary path of said heat exchanger wherein said stream receives heat and wherein carbon dioxide is evaporated; means connecting said outlet of said secondary path of said heat exchanger to said compressor whereby said carbon dioxide vapour leaving said outlet of said secondary path of said heat exchanger is applied to said compressor wherein said vapour is compressed; means connecting said inlet of said primary path of said heat exchanger to said compressor whereby said compressed carbon dioxide vapour warmed by its compression is introduced into said primary path of said heat exchanger wherein it loses heat

to said secondary path and wherein said carbon dioxide vapour changes state and liquifies to re-form liquid carbon dioxide; means connecting said outlet of said primary path of said heat exchanger to said cooler whereby liquid carbon dioxide emerging from said outlet of said primary path of said heat exchanger is further cooled in said cooler; means connecting said cooler to said inlet of said extraction chamber whereby re-formed liquid carbon dioxide is re-cycled to said inlet of said extraction chamber; and, an additional outlet in said secondary path of said heat exchanger for said matter extracted from said hops.

4,278,013

APPARATUS FOR PREPARING A HOT LIQUID MEDIUM, PREFERABLY WARM OR HOT BEVERAGES, SUCH AS TEA AND COFFEE

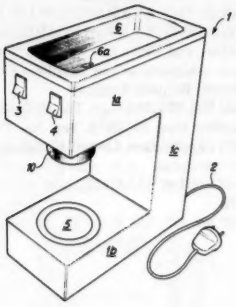
Kurt L. R. Noren, and Lennart N. Noren, both of Pukslagargatan 45, 125 30 Älvsjö, Sweden

Filed Feb. 3, 1976, Ser. No. 654,795

Claims priority, application Sweden, Feb. 14, 1975, 7501649

Int. Cl.³ A47J *31/057*

U.S. Cl. 99—288 **6 Claims**



1. An apparatus for preparing a heated liquid medium, preferably warm or hot beverages in which cold liquid medium is supplied to the apparatus and is heated in passage therethrough, said apparatus comprising:

(a) a first vessel for receiving cold liquid medium to be heated;

(b) first outlet means in said first vessel for permitting passage of cold liquid therethrough;

(c) first heating means for preheating cold liquid medium in proximity to and below said first vessel, said medium passing from said first vessel;

(d) spreading means having inlet means adjacent said first outlet means for permitting passage of cold liquid from said first vessel to said spreading means, said spreading means being arranged to spread cold liquid passing through said first outlet means over said first heating means;

(e) second heating means in proximity to and below said first heating means for further heating preheated liquid medium to a higher, predetermined temperature, wherein the second heating means presents a generally conical surface which tapers downwardly outward and is provided with a plurality of flow passages on said conical surface:

each of said plurality of flow passages forming a labyrinthine channel proceeding from the top of said cone downwardly toward its base;

each of said plurality of flow passages being equally angularly spaced about the downward outward surface of the cone;

(f) second outlet means in said first heating means adjacent said second heating means for permitting preheated liquid medium from said first heating means to flow down to said second heating means.

4,278,014

ARRANGEMENT FOR COVERING A GUIDE CHANNEL

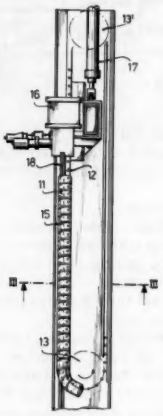
Horst H. Knieps, Wuppertal, Fed. Rep. of Germany, assignor to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,392

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1978, 2853440

Int. Cl.³ B65B *13/04*

U.S. Cl. 100—26 **4 Claims**



1. An arrangement for covering the guide channel of a strap-applying and tying apparatus having on a first side a bent member adapted to extend into and away from said guide channel for varying the length of said guide channel in conformity with an item about which a strap is to be placed, said arrangement comprising:

channel covers arranged on said first side, each of said channel covers being inherently urged by a spring to cover said guide channel;

a flexible member operatively connectible to said channel covers and said springs for moving said channel covers such that they cover the guide channel opening a predetermined length thereof, said flexible member being adapted to move along the one side of said guide channel;

guide means, operatively connectible to a pertaining base portion of said apparatus, for guiding said flexible member along a pertaining side of said guide channel during movement of said flexible member;

at least one wheel means, operatively connectible to said apparatus, for changing the direction of travel of said flexible member relative to said guide channel; and

means for moving said flexible member and said bent portion simultaneously in the longitudinal direction of said guide channel to effect said change of length of said guide channel.

4,278,015

MATERIAL HANDLING APPARATUS

Richard A. Weaver, Linden, Mich., assignor to Fluid and Electric Control Company, Fenton, Mich.

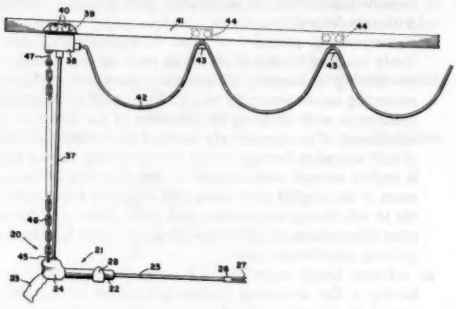
Filed Jun. 5, 1980, Ser. No. 156,557

Int. Cl.³ B30B *15/30*

U.S. Cl. 100—53 **14 Claims**

1. Material handling apparatus for use with a machine of the kind having selectively energizable and deenergizable electri-

cal driving means and control means for selectively enabling and disabling energization of said driving means, said apparatus comprising a manually manipulative arm having at one end thereof means for engaging a workpiece carried by said machine; support means connected to said arm remote from said



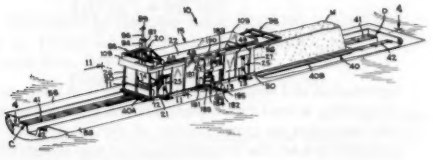
one end; and at least a pair of normally open, manually closable electrical switches in circuit with said driving means and carried by said support means, said switches being operable independently of said control means to enable operation of said driving means in response to closing of all of said switches.

4,278,016

APPARATUS FOR MAKING MODULES

Donald J. Haney, San Jose, and Andrew J. Gaudette, Livermore, both of Calif., assignors to Cotton Machinery Company, Inc., Livermore, Calif.

Filed Aug. 6, 1979, Ser. No. 63,947
Int. Cl.³ B30B *9/30*
U.S. Cl. 100—224 **25 Claims**



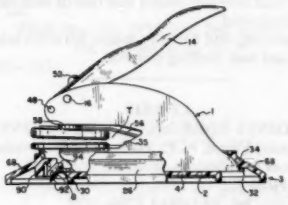
1. Apparatus for making modules comprising:
(a) a bin in which material is deposited for the forming of a module;
(b) a tamping mechanism mounted on said bin for compacting the material in said bin into a module;
(c) a door for said bin movable between an opened and closed position, said door being closed while a module is being formed and said door being opened for the removal of a module from said bin;
(d) means for opening and closing said door;
(e) a transfer table disposed at the base of said bin on which a module is supported; and
(f) means moving said transfer table to advance successively sections of said transfer table into said bin at the base thereof for forming modules in succession on said sections of said transfer table and to advance successively sections of said transfer table out of said bin for the removal of modules in succession from said transfer table.

4,278,017

CONVERTIBLE SEAL PRESS

Walter E. Conjura, Berwyn, Ill., assignor to Cosco Industries, Inc., Spring Valley, N.Y.

Filed May 21, 1979, Ser. No. 40,519
Int. Cl.³ B42B *25/06*
U.S. Cl. 101—3 SP **26 Claims**



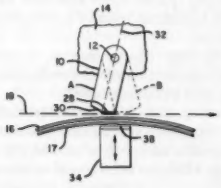
1. In combination, a pocket seal press having a bottom and a base for supporting the seal press in an upright position, the base having a recess therein adapted to receive the bottom of the seal press with the bottom of the seal press being moved down within the recess toward the bottom of the recess for positioning it in bearing relation thereon, the bottom of the recess having an opening therein, the seal press and base having means for detachably securing the seal press to the base comprising a latch at the opening in the bottom of the recess and integral with said base, the latch normally occupying a first position for holding the bottom of the seal press in the recess in bearing relation on the bottom thereof, being accessible from beneath the base for enabling engagement of the latch by a finger of the user, being movable to a second position by application of force thereto by the finger of the user, and, when in its second position, enabling the bottom of the seal press to be moved upwardly within the recess away from the bottom thereof for removal of the seal press from the recess in the base.

4,278,018

PRINTING MEANS

Brian J. Johannesson, Waterloo, Canada, assignor to NCR Canada Ltd. - NCR Canada Ltee, Mississauga, Canada

Filed Nov. 16, 1979, Ser. No. 95,705
Int. Cl.³ B41J *1/00*
U.S. Cl. 101—93 **9 Claims**



1. Apparatus for printing bar code indicia on record media moving in a path through said apparatus, a bar being selectively printed on the record media to one side or the other of a print area to form a code symbol during each printing operation comprising:
a pivotally mounted platen restricted to movement between first and second positions, one end of said platen consisting of two abutting rectangular flat printing surfaces each disposed at an angle such that it is parallel to the path of movement of the record media on which printing is to be performed when said platen is in one of said two positions, and at an acute angle thereto when said platen is in the other of said positions;

first means for causing said platen to be moved to one of said positions;

second means for causing said platen to be moved to the other of said positions;

hammer means movable between an inactive position and a striking position for effecting printing on said record media in said path by engaging said record media between a face of said hammer means and one of said flat surfaces of the platen; and

means for moving said hammer means between said inactive position and said striking position.

4,278,019

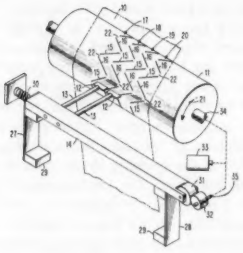
ALL-POINTS ADDRESSABLE DOT PRINTER

Johann H. Meier, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,050

Int. Cl.³ B41J *3/08, 3/12*

U.S. Cl. 101—93.04 **15 Claims**



1. An all-points addressable dot printer apparatus comprising in combination,

a plurality of sloping bar anvils adapted to be individually impacted by a plurality of longitudinal hammer blades, said plural sloping anvils being arranged mutually parallel in a row extending parallel with a print line, and each anvil having a longitudinal span corresponding to a plural dot line segment of a continuous multi-segment longitudinal print line,

said sloping anvils in combination spanning all dot positions of said continuous multi-segment print line,

said plural blades being longitudinally aligned parallel with said print line,

said blades being spaced apart and each having a width less than said longitudinal span of corresponding ones of said sloping anvils,

means for effecting relative motion of said anvils and said blades whereby said anvils in combination scan every dot position of said print line, and

means for shifting said plural hammer blades longitudinally in synchronism with said anvils by at least the differential amount between said span of said anvils and said width of said hammer blades whereby said anvils are impactable by said blades at every addressable dot position of said print line.

4,278,020

PRINT WIRE ACTUATOR BLOCK ASSEMBLY FOR PRINTERS

Albert W. Oaten, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,483

Int. Cl.³ B41J *3/10*

U.S. Cl. 101—93.05 **3 Claims**

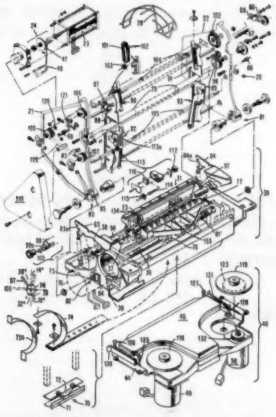
1. Print wire and print wire actuator mounting apparatus for a printer unit, comprising:

a print station incorporating facilities operable during printing operations for feeding and printing on forms at said print station, the printing operations occurring on a line-by-line basis at a print line at said print station, said print station further comprising a ribbon arranged to move past said forms along said print line;

a plurality of print wires, each of said print wires being reciprocable from an inactive to an active state in a predetermined direction of movement into printing contact with said forms;

a corresponding plurality of print wire actuators respectively coupled to said print wires, each of said actuators comprising a number of actuating elements including mounting means generally physically located substantially concentric with or along an extension of the direction of movement of its respectively coupled print wire and each of said actuators having at least one mounting surface that is angled normal with respect to the direction of movement of its coupled print wire, said actuators being operable to selectively reciprocate said print wires in order to print information on said forms along said print line during printing operations; and

an actuator block assembly, said actuator block assembly having a flat mounting surface positioned substantially normal to the direction of movement of said print wires, said actuator block assembly incorporating a guide member, and said print wires and print wire actuators being



mounted on said actuator block assembly in at least one set comprising at least two subsets wherein each of said subsets comprises an equal portion of the print wires and actuators in a set, the actuators in one of said subsets being mounted on the flat mounting surface of said actuator block assembly with their angled mounting surfaces in one angular relationship and the actuators in the other of said subsets being mounted on the flat mounting surface of said actuator block with their angled mounting surfaces in an opposite angular relationship, the two subsets thereby being angled inwardly toward one another and through said guide member as they approach the print line, and said first and second subsets being located in said actuator block assembly so that the ends of the print wires in said first and second subsets are maintained in at least two parallel slanted arrays relative to one another and further that each print wire in one of said subsets is offset with respect to both the preceding and succeeding print wires of another of said subsets whereby said print wires and actuators assume an angled serrated relationship with respect to the print line when in an assembled condition, whereby the printing ends of all of said print wires are held in close proximity with respect to said print line and in precise registration relative thereto and whereby said

print wires and print wire actuators may be spaced relatively far apart on said actuator block assembly for ease in servicing.

4,278,021

MAGNETIC INTERFERENCE PREVENTION SYSTEM

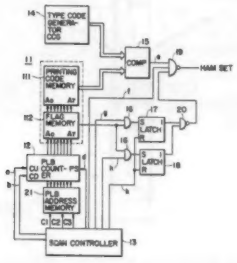
Hiroshige Nakano; Shigenobu Katagiri, and Shinichi Nishino, all of Katsuta, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan

Filed Aug. 23, 1979, Ser. No. 69,131

Claims priority, application Japan, Apr. 13, 1979, 54/45803; May 7, 1979, 54/56192

Int. Cl.³ B41J *9/38*

U.S. Cl. 101—93.29 **16 Claims**



1. In a printing device having a plurality of print hammers whose striking surfaces are arranged along a print line, and print magnets provided adjacent one another for driving said print hammers when excited, the improvement comprising: a magnetic interference preventing system having memory means for storing for columns along said print line whether said print magnet for each column is being excited or not; detection means for reading out of said memory means, when the exciting of each print magnet is started, whether or not both print magnets adjacent to said each print magnet are being excited; and inhibiting means for inhibiting the exciting of said each print magnet between said both print magnets when said both print magnets are being excited.

4,278,022

PHOTOGRAPHIC IMAGE PAINTING PROCESS

John A. Fitzpatrick, and Susan B. Fitzpatrick, both of 7335 Craner Ave., Sun Valley, Calif. 91352

Filed Jul. 27, 1979, Ser. No. 61,561

Int. Cl.³ B41F *17/22*

U.S. Cl. 101—129 **6 Claims**

1. A method of imprinting a photographic image on a vertical or uneven surface comprising:

transferring a photographic image to a screen having a predetermined minimum mesh, such screen being formed with a blocked border;

forming registration areas in the form of notches in the border of said screen to allow realignment after removal and replacement;

securing said screen to the surface to be painted with said screen in substantially intimate contact with and following the contour of the surface to be painted;

spraying a rapid-drying paint through said screen on to the surface being imprinted in a series of layers, said paint being allowed to dry between applications of each layer;

forming registration marks through said registration areas on the surface to be imprinted to facilitate realignment of said screen;

removing said screen from said surface after a series of paint applications when the paint is dry;

cleaning said screen after removal to remove paint; and

replacing and realigning said screen with said registration areas for one or more additional series of paint applications whereby said photographic image is transferred to the surface desired.

4,278,023

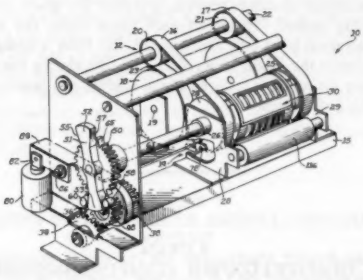
DRIVE SYSTEM FOR ENDORSER

Daniel D. Call, Northbrook, and Mervin W. La Rue, Jr., Barrington, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Mar. 26, 1979, Ser. No. 23,816

Int. Cl.³ B41F *13/24*

U.S. Cl. 101—235 **2 Claims**



1. A drive system for a document endorser comprising:

means to transport documents to be endorsed past an endorsing area at substantially a constant speed,

an endorsing shaft with an endorsing die and an endorsing plate thereon,

intermittent drive means with output means to supply power to rotate the endorsing shaft comprising:

a shaft on which is mounted the endorsing die,

gear means to supply rotative power to the shaft and to maintain the speed of the endorsing die substantially constant during endorsement of the document,

a latching disc having a detent restrained by a solenoid actuated lever arm mounted to restrain movement of the gear means,

clutch means provided between the latching disc and gear means to provide an intermittent output,

document sensing means positioned adjacent the document transport means and before the document endorsing area,

the document sensing means activated by the passage of the document, and providing a signal to release the latching disc and clutch means allowing rotation of the shaft, and

means to reset the latching disc to restrain further rotation of the shaft after endorsement of the documents until the latching disc is rereleased,

means to accelerate the endorsing shaft and endorsing die from a stopped position until the speed of the endorsing plate is substantially equal to the speed of the document in the endorsing area,

the means to accelerate causing the endorsing shaft to rotate at least 5° from its stopped position before the endorsing plate reaches the document speed in the endorsing area,

means to place the endorsing plate in contact with the document in the endorsing area,

means to decelerate the endorsing shaft and endorsing die after endorsing of the document,

the means to decelerate causing the endorsing shaft to rotate at least 5° during deceleration from the document endorsing plate speed to its stopped position,

the means to accelerate and decelerate comprising a cam and accelerating and decelerating rollers mounted on the same body for rotative movement relative to the cam, the cam mounted to the endorsing shaft and having opposite iden-

tical symetrical cam ends, each cam end having substantially flat accelerating and decelerating cam surfaces which are identical to each other, the accelerating roller operatively connected to the output means of the intermittent drive means for driving the accelerating cam surface, the decelerating roller operatively connected to the intermittent drive means for controlled stopping of the decelerating cam surface,

the gear means comprising at least two meshing gears, one gear having a rounded toothless portion substantially following the pitch diameter of the gear, and the other gear having an oversized locking tooth mating with the rounded toothless portion, whereby the gears are rotatably locked relative to each other when the solenoid actuated lever arm restrains the disc from rotating,

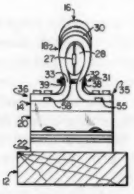
whereby the means to accelerate and decelerate the endorsing die result in reduced shock loading and quieter operation of the system.

4,278,024

QUALITY CONTROL STAMPING HAMMER

Chester R. Pennington, Conyers, Ga., assignor to Timber Products Inspection & Testing Service, Conyers, Ga.

Filed Oct. 30, 1979, Ser. No. 89,303
Int. Cl.³ B41K *1/56*
U.S. Cl. 101—405 **12 Claims**



1. A quality control stamping hammer for printing indicia on a flat article comprising:

a rigid, metallic base plate having top and bottom planar surfaces;

an elongated handle;

means for rigidly coupling said handle to said base plate wherein the longitudinal axis of said handle is at a fixed angle to said base plate top planar surface of greater than 0° and less than about 45°;

a rubber stamp pad having a top planar surface and a bottom surface, said bottom surface having raised characters thereon corresponding to the indicia to be printed onto the flat article;

a resilient, shock-absorbing layer having top and bottom planar surfaces;

means for rigidly coupling said top surface of said shock-absorbing layer to said bottom surface of said base plate; and

means for rigidly coupling said top planar surface of said stamp pad to said bottom surface of said shock-absorbing layer;

said means for rigidly coupling said handle to said base plate including a metallic support,

said metallic support including

a rigid eye portion rigidly receiving an end of said handle,

a rigid central portion extending from said eye portion, and

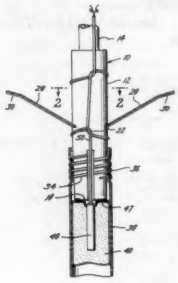
means for rigidly coupling said central portion to said base plate top surface.

4,278,025

SEISMIC EXPLOSIVE CHARGE LOADER AND ANCHOR

Oliver B. McReynolds, 913 N. Perry St., Palestine, Tex. 75801

Filed Feb. 12, 1979, Ser. No. 11,459
Int. Cl.³ F42B *3/20*
U.S. Cl. 181—116 **12 Claims**



1. A sesimic explosive charge loader and anchor for loading and anchoring in a bore hole an explosive charge in a generally cylindrical container, comprising,

a generally tubular body open at its upper end,

the tubular body having outside and inside walls and having an internal diameter sufficient to loosely receive a loading means,

upwardly facing stop means intermediate the ends of the tubular body and extending inwardly from the inside wall,

the body provided with opposed slots adjacent to the stop means,

a spring band shaped anchor having a central portion with arms angling therefrom, both of a size effective to snap into place in the tubular body through the slots with the central portion being supported by the upwardly facing stop means and the arms engaging the inside walls adjacent the slots,

the spring band shaped anchor having portions extending upwardly and outwardly exteriorly of the tubular body effective to engage and dig into the well bore wall and thereby anchor the loader and anchor against upward movement in the well bore,

the body having a groove in its side wall beginning above and extending downwardly and into the central portion of the tubular body's lower end, and

means on the tubular member adjacent the lower end thereof for securing the tubular member to the cylindrical container containing the explosive charge,

whereby the loader and anchor can be connected to the cylindrical container containing the explosive charge,

the spring band shaped anchor snapped into place in the tubular body through the slots,

a lead can be provided extending in the groove and downwardly into the cylindrical container,

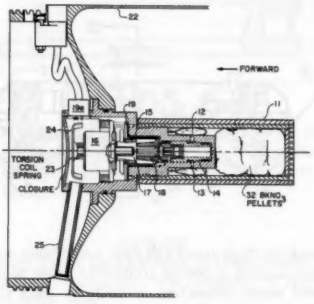
and the loader and anchor can then be pushed downwardly into the bore hole by the loading means and anchored against upward movement therein.

4,278,026

ROCKET MOTOR IGNITER, ARMING FIRING DEVICE

Joseph E. Hibbs; Gerald W. Chalmers, both of Ridgecrest, Calif.; Robert L. Durrell, Columbia, Md., and Walter C. Smith, China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 15, 1979, Ser. No. 84,487
Int. Cl.³ F42C *15/40*
U.S. Cl. 102—254 **12 Claims**



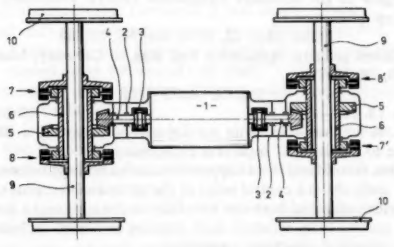
1. A safety-arming device for preventing unintentional ignition of a rocket motor, comprising:
a housing defining a plurality of vent ports;
a pressure sleeve squib assembly attached within said housing and having a plurality of vent ports;
a rotary solenoid located forward of said squib having a rotor with multiple cavities therein;
a barrier located between said rotor and said squib having multiple prongs defined to fit said cavities in said rotor;
said barrier interconnected with said squib;
a solenoid return spring attachably interconnected to said rotor; and
an exterior observation viewer so attached through said housing to afford interior visual inspection of said barrier.

4,278,027

RESILIENT RAILWAY TRUCK DOUBLE AXLE DRIVE

Johann Eichinger, Vaterstetten, and Julius Huebl, Munich, both of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,964
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853839
Int. Cl.³ B61C *9/44, 9/52;* B61F *3/04*
U.S. Cl. 105—131 **19 Claims**



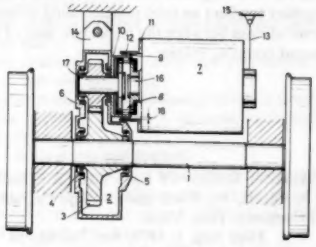
1. A double axle drive for rail vehicles, comprising:
rotatably supported first and second longitudinally spaced transversely wheeled axles;
a rotatably supported hollow shaft surrounding each axle;
a drive motor located between said axles having a drive shaft at respective ends;
gear means between each of said drive shafts and said hollow shafts at the respective ends of said motor to rotate said hollow shafts upon rotation of said drive shafts;
elastic coupling means connected adjacent each end of said hollow shaft to each first and second axle to rotate each of said axles, said elastic coupling means comprising at least three equidistant circumferentially spaced pin means secured to one of said hollow shaft and said axle with the axes thereof projecting radially, means defining at least three equidistant circumferentially spaced openings in the other of said hollow shaft and said axle, the axis of each opening extending radially, each of said openings receiving a pin means therein so that the axes thereof are colinear, the size of said pin means being smaller than the size of said opening to define a space therebetween, an elastically yieldable sleeve means received in said space between said pin means and the interior wall of said opening, said sleeve means being fixedly secured to said pin means and said interior wall of said opening.

4,278,028

RESILIENT RAILWAY TRUCK ARTICULATED SHAFT HOUSING

Hans Eichinger, Putzbrunn, and Julius Huebl, Munich, both of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Fed. Rep. of Germany

Filed Oct. 11, 1977, Ser. No. 841,199
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657575
Int. Cl.³ B61C *9/50, 17/00;* B61F *3/04;* F16C *1/06*
U.S. Cl. 105—136 **12 Claims**



1. A parallel shaft drive mechanism, in particular for driving an axle of rail vehicles, comprising:
a drive motor having an output shaft arranged parallel to said driving axle and substantially next to same;
a toothed coupling having an input member and an output member, said input member being connected to said output shaft;
a gear arrangement in a gear housing connected to said output member for facilitating a driving of said axle, one side of said gear housing being supported on said driving axle, and the other side of both said gear housing and also said motor being each connected to one end of separate pivot levers, the other ends of said pivot levers being connected to a frame member of said vehicle;
a resilient spring device surrounding said coupling means and resiliently connecting said gear housing and said motor to thereby facilitate an absorption of angular deflections between said output shaft of said motor and axle during operation, said resilient spring device being divided into a first means fixedly connected to said gear housing and a second means fixedly connected to said motor and at least two axially aligned and axially spaced elastic material rings, each elastic material ring being fixedly connected on one side thereof to said first means and on the other side thereof to said second means; and

means for effecting an axial pretensioning of said two elastic material rings.

10. A railway motor mounting system comprising:

a truck frame supported on a wheel and axle set;

a gear box comprising a plurality of gears in a drive train coupled to directly drive the axle, said plurality including a pinion gear having an input shaft positioned adjacent one end of the gear box and connected to a drive gear attached to the axle;

means supporting said one end of the gear box from the truck frame, the other end being supported on the axle by anti-friction bearing;

a traction motor having a housing and an output shaft parallel to the axle and a flexibly coupled to drive the pinion gear shaft;

first motor support means mounting the rearward end of the motor housing remote from said output shaft to the truck frame;

second motor support means mounting the forward end of the motor housing adjacent the output shaft to the gear box, said second support means comprising a flexible joint surrounding said shafts and extending between the gear box and the housing of the traction motor, said flexible joint being divided into two parts and consisting of at least two axially aligned and axially spaced elastic material rings, each elastic material ring being fixedly connected on one side thereof to one of two first coupling means, each of which is connected to said gear box and on the other side thereof to one of two second coupling means, each of which is connected to said motor;

means defining an initial axial spacing between said first and second coupling; and

means for drawing said first and second coupling means together to effect an axial pretensioning of said two elastic material rings between the respective ones of said first and second coupling means.

4,278,029

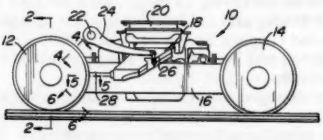
RESILIENT RAILWAY CAR TRUCK SUSPENSION

Walter S. Eggert, Jr., Huntington Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed Aug. 1, 1979, Ser. No. 62,772

Int. Cl.³ B61F *5/30, 5/50, 15/18*

U.S. Cl. 105—224.1 **10 Claims**



1. In a railway car having a truck with a sideframe for receiving an axle disposed to ride on journal bearings,

a primary suspension system disposed between said axle on journal bearings and said sideframe comprising:

(a) means for attaching said primary suspension system on said side frame,

(b) flexible support means secured to said attaching means,

(c) radial support structure spaced from said journal bearings and having a surface resiliently supported on a journal support of said journal bearings,

(d) said flexible support means having a portion secured to said radial support structure for flexibly supporting said side frame on said axle having said flexible support means in shear.

4,278,030

TRUCK FOR HIGH SPEED RAIL CARS

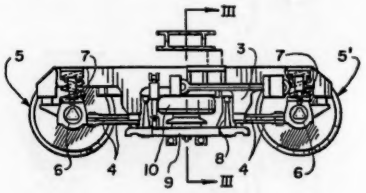
Günther Ahlborn; Eberhard Fiedler; Henry Hübsch, and Rolf Kramer, all of Siegen, Fed. Rep. of Germany, assignors to Waggon Union GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 705,424, Jul. 15, 1976, abandoned. This application Jan. 8, 1979, Ser. No. 971,218

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1976, 2611924

Int. Cl.³ B61F *5/00*

U.S. Cl. 105—208.1 **2 Claims**



1. A truck for high speed rail cars, comprising an H-shaped truck frame having a central transverse beam portion and a longitudinal beam connected centrally to each side of said central beam portion, first and second wheel axle sets each including an axle and bearing means adjacent each end of said axles for rotatably supporting said axle, primary spring means connected between said truck frame and bearing means for supporting said truck frame on said bearing means, a bracket secured to and depending from said truck frame adjacent each of said bearing means, longitudinally extending leaf spring means secured to each bracket and to said bearing means for additionally supporting said truck frame on said bearing means, spring support troughs, swing hanger means connected between said truck frame and said spring support troughs to support said spring support troughs from said truck frame, a transversal cradle extending between and over said spring support troughs carrying a rail car, connecting rod means pivotally connected to said cradle and to said spring support troughs for limiting the swinging movement of said spring support troughs, said cradle including vertically spaced upper and lower chord members and at least one tubular member secured between said upper and lower chord member enclosing an auxiliary air chamber, and one air spring supported between each of said spring support troughs and said cradle and being connectable to said auxiliary air chamber for providing an additional air chamber for said air springs.

4,278,031

PRECISION ADJUSTABLE TABLE

Holmer Dangschat, Traunwalchen, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Mar. 22, 1979, Ser. No. 22,780

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1978, 2813407

Int. Cl.³ A47F *5/12*

U.S. Cl. 108—4 **19 Claims**

1. A support apparatus for adjustably mounting a tiltable table to a base, said apparatus comprising:

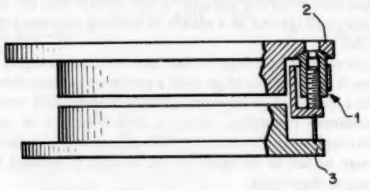
first, second and third support structures arranged symmetrically about a central point of the table, each support structure mounted between a surface on the table and a surface on the base, wherein each support structure includes an adjusting structure comprising:

a carrier body having a centrally positioned prismatic groove;

a setting bolt;

means for mounting the bolt in the groove such that the bolt is adjustable along the axis of the groove; and

means included in the mounting means, for retaining the bolt in the groove substantially without play; each support structure further including a two dimensional joint having an axis of rotation substantially tangential to a circle cen-



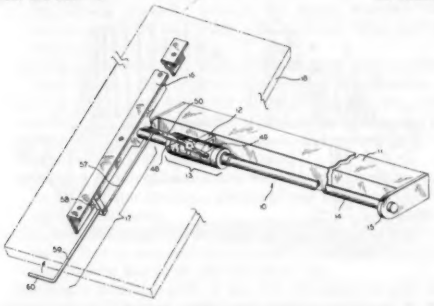
tered at the central point and mounted between the adjusting structure and one surface, and a three dimensional joint mounted between the adjusting structure and the other surface.

4,278,032

TWO DIRECTION BRAKE FOR A DRAFTING TABLE

Victor J. Kritske, Sheboygan, Wis., assignor to Mayline Co., Inc., Sheboygan, Wis.

Filed Jun. 4, 1979, Ser. No. 44,930
Int. Cl.[3] A47B *27/18*
U.S. Cl. 108—6 **10 Claims**



10. Table apparatus of the type adjustably maintaining said table in a selected attitude of rotation, said apparatus comprising:

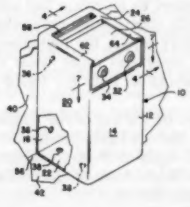
a stationary central hub,
said stationary central hub having a slot formed therethrough,
a shaft,
said stationary hub surrounding said shaft,
said shaft rotatable with respect to said stationary hub,
said stationary hub having a first end and a second end as viewed along the axis of said shaft;
first and second rotatable collars extending about the periphery of said shaft,
said first rotatable collar affixed to said shaft proximate said first hub end,
said shaft and said first collar rotatable as a unit with respect to the stationary hub,
said second rotatable collar affixed to said shaft proximate said second hub end,
said shaft and said second collar rotatable as a unit with respect to said stationary hub;
first and second spring coils,
each said spring having first and second ends,
said first spring coil positioned to overlap and grip said first collar and said first hub end,
said second spring coil positioned to overlap and grip said second collar and said second hub end,
said first and second spring coils being progressively releasable so as to enable relative rotation of said rotatable collars and thereby said shaft, with respect to said stationary hub;
first and second drums,
said first drum rotatably overlapping said first spring coil,
said second drum rotatably overlapping said second spring coil,
each said drum including means to engage one said second spring end whereby said drum may be rotated to partially uncoil said spring coil,
each said drum having an upstanding peg formed thereon;
a link arm having a first and second end,
said link arm rotatably mounted proximate said stationary hub intermediate said drums;
a bearing sleeve interposed between said central hub and said shaft,
said bearing sleeve surrounding and attached to said shaft;
an arm mount having a first end and a second end,
said first end of said arm mount having rotatably attached to it, said link arm,
said second end of said arm mount passing through said slot in said stationary hub and attaching to said bearing sleeve,
said first end of said link arm being attached to a control arm pivotally attached to said link arm,
said link arm contacts one said peg at its second end,
said link arm contacts the remaining peg intermediate said first and second ends,
said control arm linearly movable to rotate said drums to contact said peg thereby partially uncoiling both of said spring coils and allowing said shaft to rotate with respect to said stationary hub;
a support channel member,
said support channel member positioned substantially parallel to said shaft,
said support channel member being operably affixed to said stationary hub and said shaft;
a bracket positioned substantially perpendicular to said shaft,
said bracket operably affixed to said shaft and supporting said control arm;
said table having a top and bottom,
said table positioned upon and attached to said bracket,
said bottom of said table being positioned above said shaft, said control arm, said link arm, said drums, said stationary hub and said support channel;
said table, said bracket, said control arm, said link arm, said arm mount and said shaft rotatable as a unit with respect to said stationary hub.

4,278,033

TAMPER RESISTANT SAFE

Marvin Sobel, Lansdale, Pa., assignor to Bona Fide Factory Products, Inc., Huntingdon Valley, Pa.

Filed Mar. 9, 1979, Ser. No. 18,987
Int. Cl.[2] E05G *1/026*
U.S. Cl. 109—59 R **13 Claims**



1. In a tamper resistant safe of the type comprising an enclo-

sure having a bottom, sides, a front wall and a rear wall rising from the bottom and terminating upwardly in a planar top, an opening communicating with the interior of the enclosure and a lockable member movable between an open position and a locked position to selectively close the opening, the improvement comprising:

the said opening being defined by a part of the enclosure top and by a part of the enclosure front wall,

a right flange formed in the top and defining the right extent of the opening,

the right flange extending in length the entire depth of the opening, the right flange being in planar alignment with the top,

a left flange formed in the top and defining the left extent of the opening,

the left flange extending in length the entire depth of the opening, the left flange being in planar alignment with the top, and

a front flange formed in the front wall and defining the bottom extent of the opening;

the lockable member being an L-shaped cover in sliding engagement with a part of the enclosure,

the cover comprising a sliding leg which slidingly closes that part of the opening defined by the enclosure top,

the sliding leg being bent downwardly at its transverse, marginal edges to provide a pair of spaced, depending lips, each lip being positioned respectively below one of said right and left flanges when the lockable member is in its said locked position, and

a locking leg positioned at substantially ninety degrees to the sliding leg and being adapted to close that part of the opening defined by the enclosure front wall; and

a lock mounted in the locking leg and adapted to secure the cover to the enclosure when the cover is moved to its said locked position.

4,278,034

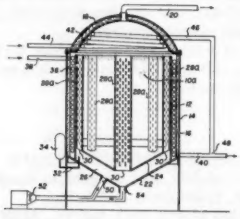
FURNACE

Lucio V. Reale, 1827-46th St., SE., Calgary, Alberta, Canada T2B 2J9

Filed Sep. 24, 1979, Ser. No. 77,961

Int. Cl.[3] F23B *7/00*

U.S. Cl. 110—234 **5 Claims**



2. A furnace adapted to burn a low grade granulated fuel, the furnace comprising:

a combustion vessel to receive a fuel and defined by inner and outer walls, spaced from each other;

first pipes to carry liquid, the first pipes being positioned between the inner and outer walls of the combustion vessel and having an inlet for liquid and an outlet for liquid;

a lid positionable on the top of the combustion vessel;

second pipes to carry a liquid positioned within the lid;

an inlet for feed liquid to the second pipes;

an outlet to take liquid from the second pipe;

an exhaust vent in the lid;

a bottom to the combustion vessel, the bottom being sloped towards the center;

an inlet in the bottom for air;

a fan, remote from the furnace, to force air through the inlet;

an ash outlet in the base;

extraction means communicating in the ash outlet;

a false bottom to the combustion vessel spaced above the bottom to define a passageway;

a gas inlet whereby gas can be introduced into the passageway and ignited as a means of starting combustion of the fuel;

a plurality of openings in the false bottom arranged so that each opening can align with a perforate column positioned in a fuel block to be received in the combustion vessel, said columns extending, when a fuel block is in position, through a combustion vessel to adjacent a lid whereby air may be fed to the fuel but the residue of burned fuel remains supported.

4,278,035

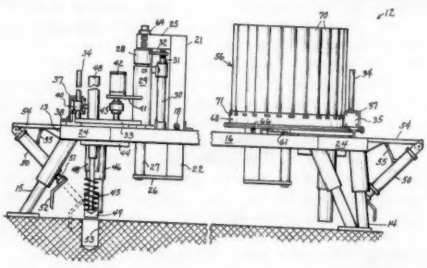
MACHINE FOR PLANTING CONTAINERIZED TREE AND SHRUB SEEDLINGS

Teddy L. Pickett, Redmond, Wash.; Isidro D. Ignacio, Altadena, and Marco Rojas, La Verne, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 14, 1980, Ser. No. 130,634

Int. Cl.[3] A01C *11/00*

U.S. Cl. 111—2 **17 Claims**

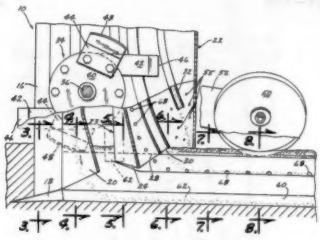


1. A seedling planter comprising portable frame means, vertical bearing shaft means mounted on said frame means, a horizontal index plate rotatably and slidably connected to said vertical shaft means and being movable between two vertically spaced levels on said vertical shaft means, depending auger means carried by said index plate at a radial distance from said vertical shaft means, said index plate having a seedling discharge opening at said radial distance but spaced from said auger means, said index plate being rotatable between a retracted position and an extended position, means to lower said index plate in said retracted position so that said auger means forms a planting hole, means to thereafter raise said index plate and rotate it horizontally to said extended position, said discharge opening being in vertical registry with said planting hole in said extended position of the index plate, carousel seedling tray means mounted to rotate around said vertical shaft means, said tray means being peripherally formed to carry a plurality of evenly spaced vertical tubular seedling containers at said radial distance, means to rotate said tray means in steps such as to cause such vertical containers to respectively communicatively register with said discharge opening when the index plate is brought to said extended position, and means to inject water under pressure into the top end of a registering seedling container responsive to the movement of said index plate to said extended position, whereby to move a seedling downwardly from its container into the planting hole previously dug by the auger means.

4,278,036
ROTARY TILLER SLOT PLANTER AND METHOD FOR USING SAME

Wesley F. Buchele, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Nov. 2, 1979, Ser. No. 90,516
Int. Cl.³ A01C 7/06
U.S. Cl. 111—52 **15 Claims**



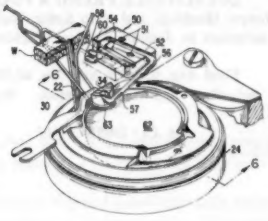
1. A method for minimum tillage planting comprising
moving a minimum tillage planter in a first direction over the soil to be planted;
tilling the soil with a pair of spaced apart parallel tiller wheels rotatably mounted on said planter about a horizontal axis, each of said wheels having a plurality of radially extending blades terminating in outer radial ends which are turned inwardly toward the space between said wheels whereby said tiller wheels throw tilled soil inwardly toward said space;
forming a first trench of predetermined depth with a subsoil shank on said planter positioned between said wheels;
freeing said subsoil shank of debris by passing the outer radial ends of said rotating wheels closely adjacent the opposite sides of said subsoil shank and by engaging the soil forwardly of said subsoil shank;
depositing fertilizer in said first trench with a fertilizer tube on said planter having a discharge end positioned behind said subsoil shank;
covering said deposited fertilizer at least partially with soil being thrown into said first trench by said filler wheels as said planter moves in said first direction;
forming a second trench in the soil deposited in said first trench with a seed tube shank positioned on said planter between said tiller wheels and spaced rearwardly of said fertilizer tube;
depositing seed in said second trench with a seed tube located on said planter rearwardly of said seed tube shank and forwardly of the trailing edges of said tiller wheels whereby soil being thrown by said tiller wheels will fall over and cover said seed;
firming the soil thrown by said tiller wheels over said seed.

4,278,037
CHAIN STITCH CONVERSION FOR LOCK STITCH SEWING MACHINE

Gerald J. Creed, Rahway; Frank Dudis, Elizabeth; William J. Edwards, Cranbury, and Herbert T. Hurler, Elizabeth, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Sep. 14, 1979, Ser. No. 75,445
Int. Cl.³ D05B 1/14, 57/04
U.S. Cl. 112—168 **1 Claim**

1. In a sewing machine having lockstitch forming instrumentalities including a frame having a work support, a throat plate supported in said work support, said throat plate having a needle aperture, a thread carrying eye pointed needle supported above said throat plate for endwise reciprocation through said needle aperture, a circularly moving looptaker carried below said throat plate on an axis substantially parallel to the path of endwise reciprocation of said needle, means for driving said needle and looptaker in timed relation for a seizure of a loop of thread from the eye of the needle bar by said looptaker during each stroke of the needle downwardly through said needle aperture and release of said seized loop by said looptaker during each succeeding upward stroke of the needle, a bobbin supporting case journalled in said looptaker and constrained from circular movement with said looptaker by stop means sustained on said frame, and a linear work feeding mechanism effective to advance work fabric on said work support in one direction from said needle aperture between each needle penetration thereof, said work feeding mechanism including a feed dog rising to an operative position through a slot in said throat plate when said upward stroke of said needle removes said needle from said work fabric and descending through said slot in said throat plate when said needle extends downwardly through said work material, means for sewing chain stitches using thread carried by said needle comprising a stationary thread loop retaining pin carried by said throat plate and having a free extremity, said retaining pin extending in a direction from said throat plate substantially parallel to said path of endwise needle reciprocation and arranged upstream of



said path of needle reciprocation with respect to the advancement of work fabric by said work feeding mechanism, said retaining pin having a groove extending substantially from said throat plate to said free extremity, a thread stripper device supported by said throat plate adjacent said feed dog accommodating slot, said stripper device including a wire form with a first end extending into said groove of said thread loop retaining pin and with a second end extending beneath said feed dog for up and down movement thereby, resilient means for urging said wire form against said feed dog, and means on said throat plate for supporting pivotal movement of said wire form; and an insert for said bobbin supporting case to take the place of the bobbin supported therein during lockstitch sewing, said insert having an aperture in an edge thereof close by said needle for receiving a lower extremity of said thread loop retaining pin, whereby when said needle has extended through a loop from the prior stitch retained on said loop retaining pin and released the loop of thread to said loop-taker, said thread stripper element will have been urged by said feed dog to strip the retained loop from the thread loop retaining pin.

4,278,038

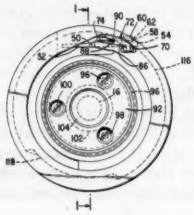
COMBINED NEEDLE GUARD AND HOOK BEAK FOR A SEWING MACHINE HOOK

Ralph E. Johnson, Convent Station, N.J., assignor to The Singer Company, Stamford, Conn.

Continuation of Ser. No. 22,536, Mar. 21, 1979, abandoned. This application Dec. 14, 1979, Ser. No. 103,661

Int. Cl.[3] D05B *57/08, 57/06*

U.S. Cl. 112—228 5 Claims



1. The combination of claim 1 including torque balancing means operably connected with the combined needle guard and hook beak for counterbalancing the effect of centrifugal force thereon during rotation of the hook body.

4,278,039

DETACHABLE PRESSER FOOT

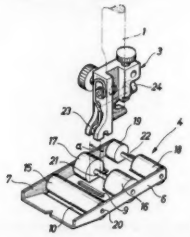
Susumu Hanyu, Hachioji, and Akio Koide, Kokubunji, both of Japan, assignors to Janome Sewing Machine Industry Co., Japan

Filed Aug. 9, 1979, Ser. No. 64,980

Claims priority, application Japan, Aug. 11, 1978, 53/109551[U]

Int. Cl.[3] D05B *29/12*

U.S. Cl. 112—240 3 Claims



1. A presser foot, for use in combination with a sewing machine having a presser bar axially displaceable relative to a needle plate, and a presser foot holder secured to a lower end of the presser bar, said presser foot comprising:

(i) a frame including a needle dropping hole and a plurality of apertures to receive rollers

(ii) a plurality of rollers journalled on said frame for rotation about respective axes which are transverse to the direction of feed of material past the presser foot when in use, said rollers protruding through the frame apertures, said plurality of rollers including a pair of rollers which are coaxial and which are closely adjacent to the needle hole in the direction of feed of material, said pair of rollers being spaced axially from each other,

(iii) connection means on said frame disposed between said spaced rollers for detachable engagement with the presser foot holder.

4,278,040

BRAKING RUDDER DEVICE

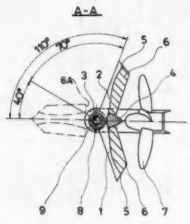
Jerzy Doerffer, Sopot; Jerzy Madey, Gdansk-Wrzeszcz; Jan Kozlowski, Gdansk-Wrzeszcz, and Andrzej Niepiekto, Gdansk-Wrzeszcz, all of Poland, assignors to Politechnika Gdanska, Gdansk, Poland

Filed May 9, 1979, Ser. No. 37,566

Claims priority, application Poland, May 10, 1978, 206679

Int. Cl.[3] B63H *25/34*

U.S. Cl. 114—170 2 Claims



1. A braking rudder device comprising a pair of hinged members to be pivoted about a common vertical axis behind the propeller of a vessel, each hinged rudder member being independently rotatable from a first position lying in a vertical plane of symmetry and rotatable independently and oppositely outwardly from said plane to a second position through an angle of 110° about said common vertical axis, each said member having a concave forwardly facing surface in said second position, said hinged members being supported for said pivotal movement about said common vertical axis which is located at the leading edge of said rudder members, a vertical post positioned immediately forward of said axis and having a tapered profile in cross-section perpendicular to said common vertical axis and defining the leading edge of said rudder device, support means for each hinged member comprising first reinforcing plates horizontally disposed along the top edge of each hinged member, second horizontal reinforcing plates positioned along the bottom edge of each hinged member and third horizontal reinforcing plates secured to each hinged rudder member in a horizontal plane and coaxial with said propeller when said hinged members are disposed adjacent to each other in said first position, each of said horizontal plates extending forwardly of the concave surface of each corresponding hinged member in said second position, and a pair of vertically elongated rotational control members mounted concentrically with respect to each other and coaxially with respect to said vertical axis, and adapted for independent transmission of turning forces to each hinged member, respectively.

4,278,041

ANCHOR HANDLING GUIDES

Billy W. Williams, Morgan City, La., assignor to McDermott Incorporated, New Orleans, La.

Filed Nov. 7, 1979, Ser. No. 92,014

Int. Cl.[3] B63B *21/04, 21/22;* B66D *1/38*

U.S. Cl. 114—210 5 Claims

1. An apparatus for use by marine vessels in handling anchors and the like, including bringing anchors on board said vessel, said apparatus comprising a pair of pin assemblies, each assembly comprising:

a. a pin;

b. a frame providing rotatable support for the pin at both ends of the pin;

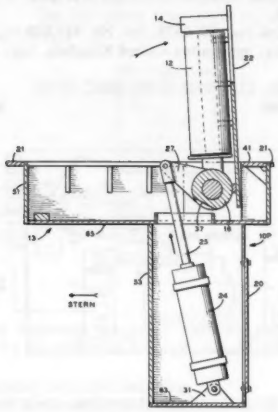
c. a rotatable drum to which the frame is attached;

d. a means for rotating the drum;

e. a means for preventing drum rotation;

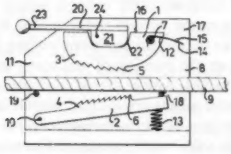
f. a cover plate attached to the frame and drum, the plate

forming a part of the vessel's deck when the rotational axis of the pin is horizontally disposed; and



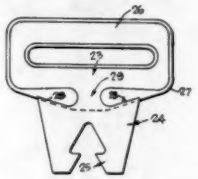
g. a housing for the pin assembly, said housing being recessed into the deck floor of the vessel in such a way that the top of the housing forms part of the vessel's deck.

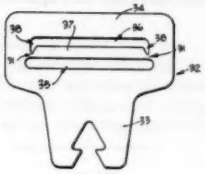
4,278,042
CAM CLEAT
Björn V. Lindquist, Nordhemsgatan 39, 413 06 Gothenburg, Sweden
Filed May 31, 1979, Ser. No. 44,175
Claims priority, application Sweden, Jun. 12, 1978, 7806785
Int. Cl.³ B63B *21/04*
U.S. Cl. 114—218 **4 Claims**



1. A cam cleat for securing a line which is tensioned in one direction comprising:
a housing;
a first part attached to the housing by an axle;
a second part attached to the housing by an axle with the line being receivable between the first and second parts;
the first and second parts being pivotable around their respective axles toward one another to a fixed position and away from one another to a free position, the first and second parts having serrated surfaces facing one another;
the first and second parts when pivoted around their respective axles in one direction approaching one another and in the other direction moving away from one another;
one spring coupled to the first part and the housing so that the first part is spring-loaded to adopt the free position;
another spring coupled to the second part and the housing so that the second part is spring-loaded to adopt the fixed position;
control means for moving the first part to and locking the first part in the fixed position when operated;
the axle of the first part and the serrated surface of the first part being positioned so that when the first part is moved from the free position to the fixed position, the serrations move in the one direction in which the line is tensioned.

4,278,043
SEAT BELT LOAD INDICATOR
Robert B. Heath, Lonsdale, Australia, assignor to Rainsfords Metal Products Pty. Ltd., Lonsdale, Australia
Filed Nov. 7, 1979, Ser. No. 92,073
Claims priority, application Australia, Nov. 24, 1978, PD6906
Int. Cl.³ B60Q *9/00*; G01L *5/06*
U.S. Cl. 116—28 R **3 Claims**



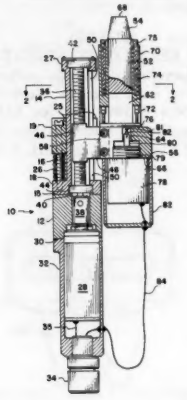


1. A vehicle safety seat belt assembly comprising belt webbing, a mounting bracket, a buckle, and a tongue cooperable with the buckle,
said tongue having a first end providing walls defining a belt webbing receiving slot, a second end for insertion into said buckle, a distortion area of metal in the region of said first end proximate to said second end, and a narrow neck of metal joining said second end and said distortion area,
said distortion area having such length, breadth and depth as to constitute a beam that bends and becomes permanently distorted when the belt assembly is subjected to a first stage of overload and provides an identifiable indication that the belt assembly has been subjected to said first stage of overload, but is not destroyed so that the belt assembly remains operable between said first stage of overload and a second stage of overload which greatly exceeds said first stage.

4,278,044
REMOTE MARKING TOOL
Larry A. French, Newport News, Va., assignor to Davis, French and Associates, Inc., Hampton, Va.
Filed Dec. 11, 1978, Ser. No. 968,304
Int. Cl.³ B05C *1/02*
U.S. Cl. 118—256 **23 Claims**

1. A remotely controllable tool for identifying the location of a defective heat exchanger tube within a heat exchanger header compartment comprising:
means for visably marking the location of said defective heat exchanger tube;
means for protecting said defective heat exchanger tube against internal contamination;

means for remotely actuating said means for visably marking said defective heat exchanger tube; and



means for remotely actuating said means for protecting said defective heat exchanger tube against internal contamination.

4,278,045

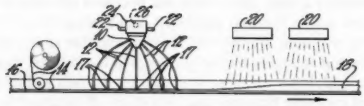
DISPENSING FOAMABLE MATERIAL

Abu Ahmad, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 25, 1979, Ser. No. 6,953

Int. Cl.[3] B05B *1/04, 1/14*

U.S. Cl. 118—323 **3 Claims**



1. Apparatus comprising:

a. a moving surface for receiving foamable material;

b. a chamber for dispensing said foamable material;

c. a plurality of discharge ports positioned through the walls of said chamber, said discharge ports:

(1) being conduits having nonparallel longitudinal axes; and,

(2) being generally coplanar in a plane generally parallel to the direction of movement of said moving surface; and,

(3) having longitudinal axes oriented at different angles with respect to the vertical center line of said chamber so that the streams discharged from said discharge ports are nonintersecting; and,

d. means for oscillating said chamber across the width of said moving surface.

4,278,046

PAINT SPRAYING APPARATUS

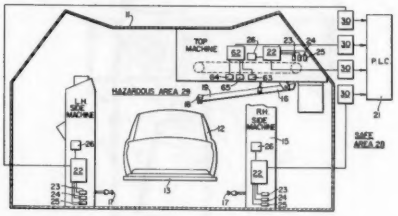
Ronald M. Clarke, Brownhills, and Edward Johnston, Chertsey, both of England, assignors to Carrier Drysys Limited, London, England

Filed Jun. 30, 1978, Ser. No. 921,149

Claims priority, application United Kingdom, Apr. 19, 1978, 15495/78

Int. Cl.[3] B05B *12/02;* **B05C** *15/00*

U.S. Cl. 118—695 **16 Claims**



1. Apparatus for automatic paint spraying, comprising booth means to contain a hazardous atmosphere in which spraying is effected, said booth means being surrounded externally by a non-hazardous atmosphere, said apparatus further comprising a spray gun for directing paint onto an article to be coated, reciprocating means for effecting a reciprocating stroke of said spray gun, valve means operable to control discharge of paint through said spray gun, and automatic control means for controlling the operation of the valve means during the stroke of said spray gun; said automatic control means comprising: a first part providing programmable control means for determining a desired sequence of operations of said valve means, a second part comprising position indicating means for generating an electrical digital signal representing the position of the spray gun during its stroke, and comparator means for comparing the signal from the position indicating means with reference signals from said programmable control means determining the sequence of operation of said valve means during the stroke and providing an output for use in controlling said valve means in dependence on the position of said spray gun; wherein said reciprocating means, valve means and second part of said automatic control means are located within said booth means and the said first part of said automatic control means is located entirely outside said booth means and connected through a suitable interface to the said second part of the automatic control means, whereby said programmable control means is not exposed to said hazardous atmosphere.

4,278,047

ABSORBENT FOR ANIMAL EXCRETA

Sebastiano F. Luca, Waltharistr. 5 b, D-1000 Berlin 39, Fed. Rep. of Germany

Filed Oct. 3, 1979, Ser. No. 81,390

Int. Cl.[3] A01K *1/015*

U.S. Cl. 119—1 **11 Claims**

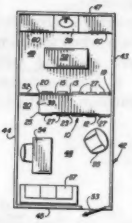
1. An absorbent for animal excreta consisting of vermiculite particles having a particle size smaller than 15 mm and a pouring weight smaller than 200 g/l and particles selected from the group composed of powdered gypsum and powdered clay adhering to said vermiculite particles for weighing down said vermiculite particles so that the vermiculite particles will not adhere to fur of animals.

4,278,048

VETERINARY MEDICINE FACILITY

Edward J. Klein, 1000 B. Manhattan Dr., Tempe, Ariz. 85282

Filed Oct. 11, 1979, Ser. No. 83,578
Int. Cl.[3] A01K *1/00*; A47B *81/00*
U.S. Cl. 119—15 **15 Claims**



13. An improved veterinary medicine facility especially adapted for the treatment of small animals, said facility comprising:

a. a building structure including,
  i. first and second spaced apart side walls, and
  ii. first and second spaced apart end walls;
b. a partition intermediate said first and said second end walls including
  i. first and second spaced apart panels
    said first panel having an outer surface directed toward said first end wall,
    said second panel having an outer surface directed toward said second end wall,
  ii. a plurality of tubular enclosures having a first open end adjacent said first panel and a second open end adjacent said second panel,
  iii. a plurality of first openings extending through said first panel and communicating with the first open end of an enclosure,
  iv. a plurality of second openings extending through said second panel and communicating with the second open end of an enclosure,
  v. a plurality of first closure members for selectively closing each of said first openings; and
  vi. a plurality of second closure members for selectively closing each of said second openings;
    said partition dividing said building structure into a reception area adjacent said first end wall and a treatment area adjacent said second end wall.

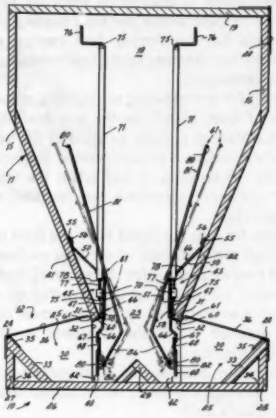
4,278,049

ANIMAL FEEDER

Larry R. Van Dusseldorp, Britt, Iowa, assignor to Marting Mfg. Inc., Britt, Iowa

Filed May 12, 1980, Ser. No. 148,787
Int. Cl.[3] A01K *5/00*
U.S. Cl. 119—53.5 **11 Claims**

7. An animal feeder comprising,
a feed hopper having side walls, end walls, a bottom assembly, and an open top,
a movable closure operable to close said open top of said feed hopper,
metering means positioned to extend below the lower edge of at least one of said side walls,
said bottom assembly including a feed trough under said metering means and in communication with said feed hopper,
said metering means including a slide plate housing, a slide plate, and an agitator plate,
said slide plate housing being mounted on the inside surface of said side wall,
said slide plate being supported by said housing for vertical movement relative thereto.
said agitator plate being movably suspended from said slide plate, and
adjustment means for effecting vertical adjustment of said slide plate relative to said housing, said adjustment means



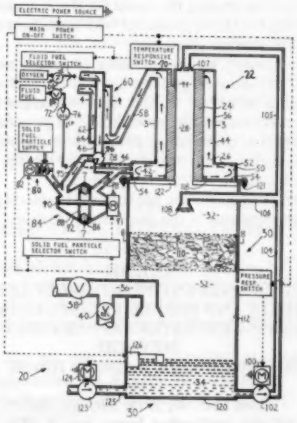
including a rod secured adjacent one end to said slide plate and having the opposite end accessible through the open top of said feed hopper such that movement of said opposite end of said element effects vertical adjustment of said slide plate and of the depending agitator plate.

4,278,050

RAPID RESPONSE STEAM GENERATING APPARATUS

Wellesley R. Kime, 8745 Appian Way, Los Angeles, Calif. 90046

Continuation-in-part of Ser. No. 32,935, Apr. 24, 1979, Ser. No. 50,820, Jun. 21, 1979, Ser. No. 52,779, Jun. 28, 1979. This application Dec. 5, 1979, Ser. No. 100,393
Int. Cl.[3] F22B *27/00*
U.S. Cl. 122—39 **22 Claims**



1. A rapid response steam generator comprising:
(a) a combustion chamber having fuel and oxygen intake passage means, fuel ignition means, and an exhaust discharge outlet, for burning fuel and generating heat energy;
(b) a fluid storage container for storing steam and liquid under pressure;

(c) a heat exchanger mounted on and located above the fluid storage container, the heat exchanger having a heat retaining substance, a fluid inlet, a fluid outlet communicating with the fluid storage container, and a fluid heating passage communicating with the fluid inlet and fluid outlet wherein heat is transferred from the heat retaining substance to fluid within the fluid heating passage;

(d) means for transferring heat energy generated in the combustion chamber to the heat retaining substance in the heat exchanger;

(e) means for commencing the burning of fuel for the generation of heat energy in the combustion chamber when temperature at a given location of the heat retaining substance is below a predetermined temperature and terminating the burning of fuel when the temperature of the heat retaining substance has reached a predetermined temperature;

(f) means for moving liquid from the fluid storage container through the fluid inlet of the heat exchanger and into the fluid heating passage for the generation of steam when the pressure within the apparatus is below a predetermined pressure and terminating the movement of the liquid when the pressure within the apparatus is above a predetermined pressure;

(g) means for discharging steam under pressure from the fluid storage container as available steam pressure for operating a load;

(h) means for moving liquid into the apparatus for replacing liquid which has been used by the apparatus for the generating of steam.

13. A method for the rapid generation of steam comprising the following steps:

(a) burning fuel for the generation of heat energy;

(b) transferring the heat energy generated by the burning of fuel to a heat retaining substance in a heat exchanger;

(c) commencing and terminating the burning of fuel by temperature responsive means for maintaining the temperature of a given location in the heat retaining substance at essentially a predetermined temperature;

(d) storing steam and liquid under pressure in a fluid storage container mounted onto and located under the heat exchanger;

(e) moving liquid from the fluid storage container into contact with the heat retaining substance in the heat exchanger for heating the liquid for the generation of steam;

(f) moving the steam produced within the heat exchanger to the fluid storage container;

(g) commencing and terminating the movement of liquid from the fluid storage container into contact with the heat retaining substance in the heat exchanger by pressure responsive means for maintaining the pressure within the apparatus at essentially a predetermined pressure;

(h) discharging steam stored in the fluid storage container as available steam for operating a load;

(i) moving liquid into the apparatus for replacing liquid used by the apparatus in the generation of steam.

4,278,051

METHOD OF PREVENTING RECIRCULATION PUMP CAVITATION AND FORCED RECIRCULATION PUMP TYPE STEAM-GENERATING APPARATUS USING THE METHOD

Toichi Shida, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 30, 1979, Ser. No. 25,575
Claims priority, application Japan, Apr. 5, 1978, 53-39192
Int. Cl.[3] F22D *7/00*
U.S. Cl. 122—406 A **6 Claims**

1. A forced recirculation type steam-generating apparatus in which water therein is circulated forcibly by a pump, comprising:

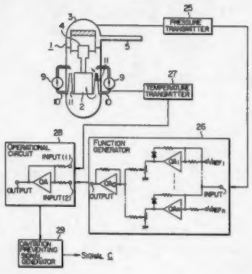
(a) a steam-generating section;

(b) means for detecting pressure in said steam-generating section;

(c) means for generating a saturation temperature corresponding to the pressure detected by said pressure detector means;

(d) means for detecting a temperature of water at a suction side of said pump; and

(e) means for generating a signal for reducing a rotational speed of said pump when a difference between said detected temperature and said saturation temperature is reduced below a predetermined temperature level, whereby a recirculation flow by said pump is reduced.



5. A method of preventing the recirculation pump cavitation of a steam-generating apparatus, comprising the steps of:

(a) detecting pressure in the steam-generating section of said steam-generating apparatus;

(b) detecting a temperature of water at a suction side of said recirculation pump;

(c) generating a saturation temperature associated with said detected pressure; and

(d) reducing the rotational speed of said recirculation pump to a predetermined level when a difference between said detected temperature and said saturation temperature is reduced below a predetermined value, thereby reducing the recirculation flow by said pump.

4,278,052

BOILER CONTROL SYSTEM

Everett H. Sharp, Huntington, N.Y., assignor to Leeds & Northrup Company, North Wales, Pa.

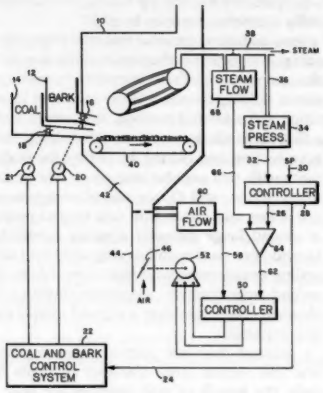
Filed Sep. 27, 1979, Ser. No. 79,279
Int. Cl.[3] F22D *1/28*
U.S. Cl. 122—449 **4 Claims**

4. The method for controlling the fuel supply rate and the combustion air supply rate for a boiler fired by solid fuels which are carried through the combustion zone of the boiler by a traveling grate which comprises the steps of:

controlling the fuel feed rate of the boiler to minimize the deviation of the steam outlet pressure from its desired value;

controlling the flow of combustion air to the undergrate region of said boiler to tend to maintain the air flow in

direct proportion to the steam flow in the boiler outlet; and



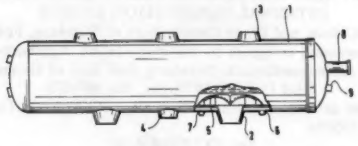
biasing said proportion in response to said deviation to modify the air flow so as to tend to reduce said deviation.

4,278,053

APPARATUS FOR DISTRIBUTION OF A MIXTURE OF VAPOR AND LIQUID IN A SEPARATOR WITH HORIZONTAL AXIS

Roger Bessouat; Jacques Marjollet, both of Paris, and Gerard Palacio, Montmorency, all of France, assignors to Stein Industrie S.A., Velizy-Villac oublay, France

Filed Nov. 21, 1979, Ser. No. 96,264
Claims priority, application France, Nov. 24, 1978, 78 33183
Int. Cl.³ F16T *1/00*; F22B *37/26*
U.S. Cl. 122—488 **5 Claims**



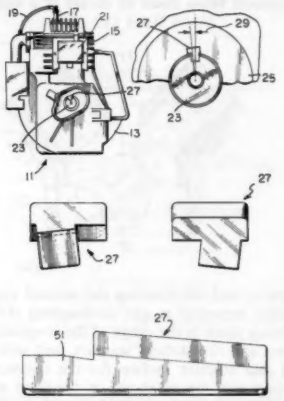
1. Apparatus for distribution and preliminary separation of a mixture of vapour and liquid in a sleeve separator having a horizontal axis, from a tubular neck disposed close to the lower generatrix of the separator sleeve, said apparatus comprising two deflectors in the general shape of portions of cylinders, with axes parallel to one another and perpendicular to that of the separator, said deflectors being symmetrical with respect to the vertical plane of symmetry of said neck perpendicular to the axis of said separator, in which plane of symmetry they have a common generatrix, each deflector being cut by two planes oblique with respect to the longitudinal plane of symmetry of said separator, the projections of the oblique planes in the plane of the entry circle of said neck in the separator lying outside said entry circle, said deflectors being completed by three partitions, one in the plane of longitudinal symmetry of the separator and extending from said common generatrix to the exterior of said entry circle, and the other two being symmetrical with respect to the first and cutting it along a straight line parallel to the axis of said neck, but outside the latter, the edges of said deflectors being provided with troughs for collecting and discharging the liquid deposited on their concave surface, and said troughs issuing into the volume comprised between said other two partitions, into which the mixture of vapour and liquid is unable to penetrate.

4,278,054

IGNITION TIMING

Kenneth W. Campen, Kiel, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Jul. 12, 1978, Ser. No. 923,997
Int. Cl.³ F22B *7/06*
U.S. Cl. 123—146.5 A **12 Claims**



1. The method of permanently presetting the ignition timing of an internal combustion engine having a rotatable shaft and a wheel supported on the shaft for rotation therewith wherein the engine ignition system includes a relatively fixed portion supported by the engine and a movable portion supported on the wheel for rotation therewith so that the same flywheel and movable ignition portion may be adapted to a selected one of at least two distinct engine types having different relatively fixed ignition portions and requiring dissimilar angular flywheel positions relative to the engine crankshaft to achieve proper engine timing, the method comprising the steps of:

providing a slot in the shaft surface extending generally parallel to the axis of rotation of the shaft;

providing a slot in the wheel along an inner hub thereof and generally alignable with the shaft slot when the wheel is supported on the shaft;

selecting one of a plurality of keys having differing offset amounts with the particular offset selected providing correct ignition timing for the engine; and

assembling the wheel to the shaft with one part of the selected key occupying the shaft slot and another part of the selected key occupying the wheel slot to thereby fix the angular relationship between the shaft and wheel at the angular offset determined by the particular key selected.

4,278,055

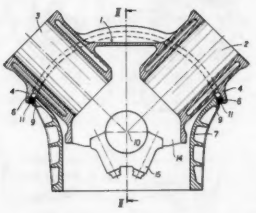
LOW-NOISE-LEVEL INTERNAL COMBUSTION VEE-ENGINES

Hans List, 126 Heinrichstrasse, Graz, Austria; Othmar Skatsche, Graz, Austria; Gerhard Thien, Graz, Austria; Heinz Fachbach, Graz, Austria; Josef Greier, Graz, Austria, and Johann Wagner, Graz, Austria, assignors to Hans List, Graz, Austria

Division of Ser. No. 877,896, Feb. 15, 1978, abandoned. This application Jul. 9, 1979, Ser. No. 55,521
Claims priority, application Austria, Feb. 24, 1977, 1259/77; Oct. 24, 1977, 7600/77
Int. Cl.³ F02B *77/00*
U.S. Cl. 123—195 S **4 Claims**

1. A low-noise-level internal combustion Vee-engine, comprising a crankshaft and crankshaft main bearings which are engine parts directly affected by body resonance and sound vibration, a skeletal engine unit support which supports said

crankshaft main bearings, a cylinder head mounted on said engine unit support, auxiliary units rigidly connected to the engine unit support and to a cylinder head, a crankcase and a flywheel case connected with the crankcase, and at least one sound-absorbing element located above the crankshaft between said engine parts which are directly affected by sound vibration and said crankcase and flywheel case, connection between the skeletal support and the crankcase with the sound-absorbing element being made by means of a supporting sur-



face arranged at and surrounding the skeletal support and a counter surface arranged at and surrounding the crankcase, both areas being plane in the range of the longitudinal sides of the crankcase and the skeletal support, and said supporting surface and said counter surface for the connection of the skeletal support and the crankcase at the front sides of said engine parts being formed as cylinder areas at the crankcase and corresponding cylindrical counter areas at the skeletal support, the axes of said cylinder areas extending in the engine's plane of symmetry and parallel to the crankshaft axis.

4,278,056

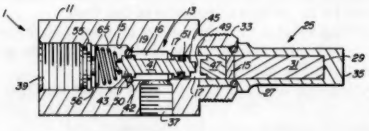
TEMPERATURE SENSOR VALVE

Bill G. Davis, 516 W. Rancho, Phoenix, Ariz. 85013

Filed May 14, 1979, Ser. No. 38,931

Int. Cl.³ F02B *77/00*

U.S. Cl. 123—198 D **5 Claims**



1. In a liquid cooled engine or engine-driven accessory having engine protection means for reducing the engine RPM to a safe level in response to a fluid pressure below an acceptable level, a temperature sensor valve for continuously sensing the operating temperature of the engine or engine-driven accessory and the presence or absence of liquid coolant, the engine or engine-driven accessory including a housing and a coolant-filled chamber, and for reducing the fluid pressure below the acceptable level in response to an over-temperature condition or in response to at least a partial loss of the liquid coolant, said temperature sensor valve comprising in combination:

a. a body having a cylindrical bore;

b. a first radially inwardly extending annular seat dividing said bore into first and second sections;

c. said second section including an intermediate bore portion having a diameter larger than the diameter of the remainder of said section;

d. a fluid pressure port communicating with said intermediate bore portion for connection to a source of fluid under pressure;

e. a fluid outlet port communicating with said first bore section for providing a low pressure fluid drain;

f. temperature sensor means coupled to the housing and protruding into the coolant-filled chamber for receiving heat from the housing and for transferring heat into the coolant, said temperature sensor means including:

i. a temperature sensing tip having an internal, longitudinally extending receptacle; and

ii. a temperature responsive material disposed within said receptacle for expanding and contracting in response to the temperature of said temperature sensing tip;

g. a piston slidably displaceable in said bore between a first position and a second position, said piston including:

i. a first large diameter element extending into said first bore section and having an O-ring for sealing engagement with said annular seat when said piston is in said first position, said O-ring out of engagement with said seat when said piston is in said second position;

ii. a second large diameter element extending into said second bore section and having an O-ring in continuous sealing engagement with said second bore section, said second large diameter element including a face in mechanical communication with said temperature responsive material;

iii. a reduced diameter portion extending between said first and second large diameter elements for substantially the length of said intermediate bore portion to provide fluid communication between said fluid pressure port and said first bore section;

h. biasing means for exerting a predetermined force on said piston to urge said piston into the first position;

whereby an engine over-temperature condition or loss of a predetermined amount of liquid coolant causes said temperature responsive material to expand and displace said piston from the first position to the second position for opening the path between said fluid pressure port and said fluid outlet port for reducing the fluid pressure below the acceptable level and thereby actuating the engine protection means to reduce the engine RPM to a safe level.

4,278,057

METHOD OF BURNING APPLIED-IGNITION FUELS IN AN AIR-COMPRESSING DIRECT-INJECTION INTERNAL COMBUSTION ENGINE

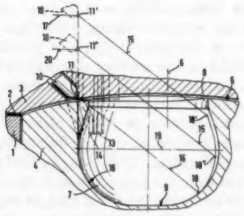
Alfred Urlaub, and Franz Chmela, both of Nürnberg, Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nürnberg, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 969,673

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1977, 2755916

Int. Cl.³ F02B *3/04*

U.S. Cl. 123—276 **4 Claims**



1. A method of burning fuels ignited by applied-ignition in an air compressing direct injection internal combustion engine having a piston having a stroke volume with an upper dead center position and having a combustion chamber formed in said piston shaped in the form of a body of revolution including a wall and an edge as well as an upper end and a depth, which includes the steps of: starting a fuel injection cycle and spraying a free fuel current in a stream length directly onto a portion of the wall of said combustion chamber from a point substan-

tially diametrically opposite thereof with the major portion of the fuel deposited on the combustion chamber wall in the form of a film, admitting air into said combustion chamber while imparting thereto a rotary movement to cause the air gradually to detach said film in the form of vapor from the combustion chamber wall and to intermix said air with said vapor, beginning the ignition near the combustion chamber edge at a location downstream in the direction of the rotary movement of said air where the free fuel current begins to traverse the combustion chamber and upstream in the direction of the rotary movement of said air where the fuel current impinges against the combustion chamber wall, selecting a fuel pressure level of the fuel current injection so that the rate of fuel injection into the cylinder lies between 0.7 and 1.3 cubic millimeters per degree angle times liter stroke volume and the fuel impingement point at the starting of the fuel injection cycle is substantially even with the upper end of the combustion chamber wall, and in the upper dead center position of the piston the fuel impingement point lies near the lower end of the combustion chamber wall near the combustion chamber bottom with the fuel impingement point traversing nearly the entire depth of the combustion chamber on the combustion chamber wall.

4,278,058

RPM REGULATOR FOR FUEL INJECTION PUMPS IN INTERNAL COMBUSTION ENGINES

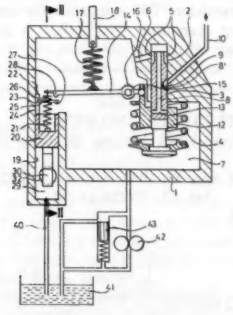
Walter Berner, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 970,063

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1978, 2802608

Int. Cl.³ F02D *1/06, 1/02*

U.S. Cl. 123—387 **15 Claims**



1. An rpm regulator for fuel injection pumps for internal combustion engines comprising a first housing forming an injection pump suction chamber, an injection pump within said first housing at least one control lever for a control sleeve of said injection pump which doses the injection quantity, a spring loaded piston movable within a second housing in response to rpm-dependent pressure means of a regulator fluid, said piston arranged to cooperate with a stop means which limits the injection quantity, said piston being displaceable against a spring in response to the pressure of the regulator fluid to create a pressure-dependent axial displacement and said piston and having at least one contact surface arranged to roll against a pressure roller means, said pressure roller means being subjected to fluid pressure influences in said suction chamber, to create a pressure-dependent force of said roller means, the movement of said piston within said second housing being responsive to the form of said contact surface, the force of said pressure roller means and the pressure-dependent axial displacement of the piston against the spring.

4,278,059

DEVICE FOR THE CONTROL OF THE TRAVELING SPEED OF A MOTOR VEHICLE

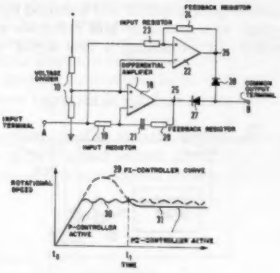
Harald Collonia, Glashütten, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,168

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839382

Int. Cl.³ F02D *11/10*

U.S. Cl. 123—399 **6 Claims**



1. In a device for the control of the traveling speed of a motor vehicle with a regulating unit which is actuatable by the vehicle driver, particularly with a gas pedal, with electrical means for the transmission of the movement of the regulating unit to an element which influences the fuel-air mixture, particularly a throttle valve, with an electrical controller, the element which influences the fuel-air mixture being in operative connection with the output of the electrical controller, and including at least one comparator, one of the inputs of the comparator being applied with a voltage which is proportional to the rotational speed of the motor and its other input being applied with an adjustable constant voltage value for the rotational speed limitation, the improvement wherein

the electrical controller includes,

a PI-controller having a proportional-integral time response, and

a P-controller, having a proportional time response, of large amplification connected in parallel with said PI-controller, whereby said electrical controller is active during every change in the rotational speed to achieve a new rotational speed substantially without overshooting and oscillations.

4,278,060

FEEDBACK TYPE AIR FUEL RATIO CONTROLLING SYSTEM

Toshiaki Isobe, Nagoya, and Tatsuo Yokoyama, Kakogawa, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 942,801, Sep. 15, 1978, abandoned. This application Jul. 18, 1980, Ser. No. 169,986

Claims priority, application Japan, May 2, 1978, 53-53086

Int. Cl.³ F02M *7/00;* **F02B** *3/00, 75/10*

U.S. Cl. 123—440 **21 Claims**

1. A feedback type air fuel ratio controlling system comprising:

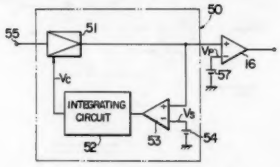
an exhaust gas sensor for supplying a sensor signal representative of an air fuel ratio,

an automatic gain control (AGC) DC level amplifier having a gain changeable at a predetermined time constant in response to said sensor signal of said sensor, including:

a variable gain DC amplifier having a signal input coupled to said sensor signal, an output, and a control input for controlling its gain,

said variable gain DC amplifier being responsive to said sensor signal so as to (a) decrease its gain in accordance with said predetermined time constant when the output of said variable gain DC amplifier is greater than a fixed predetermined reference signal Vs so that a rich to lean change of air fuel ratio is detected earlier than it would be in the absence of such a gain change, and (b) increase its gain in accordance with said predetermined time constant when the output of said variable gain DC amplifier is less than Vs so that a lean to rich change of air fuel ratio is detected earlier than it would be in the absence of such a gain change,

a comparator having a first input coupled to the output of said variable gain amplifier and a second input adapted to be coupled to a source of said reference signal Vs said comparator for producing a first signal whenever the



output of said variable gain amplifier is greater than Vs and a second signal whenever the output of said variable gain amplifier is less than Vs, and

an integrator having an input coupled to the output of said comparator, for generating an output signal Vc, responsive to said first and second signals, said output signal Vc being coupled to said control input of said variable gain amplifier whereby the gain of said variable gain amplifier is controlled in accordance with the time constant of said integrator and the output signals of said comparator,

a deviation detector circuit for comparing the output of said automatic gain control DC level amplifier with a fixed reference signal Vp representing a stoichiometric air fuel ratio to produce a deviation signal, and

an actuator for controlling the air fuel ratio in response to the deviation signal.

4,278,061

METHOD AND APPARATUS FOR ADJUSTING FUEL INJECTION CONTROL

Peter Werner, Stuttgart, and Ulrich Drews, Vaihingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 12, 1977, Ser. No. 859,509

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1977, 2700628

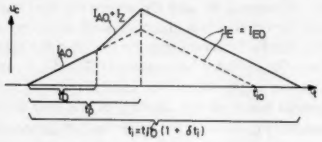
Int. Cl.³ F02D *5/02*

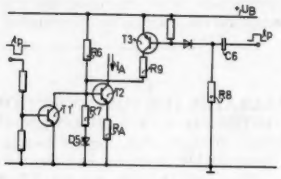
U.S. Cl. 123—483 **3 Claims**

1. In a fuel injection system for an internal combustion engine, said system including means for generating preliminary electrical fuel control pulses "tp" whose pulse length is a function of engine speed and air flow rate and further means to generate from said preliminary pulses "tp" a train of valve-actuating pulses "ti", comprising:

said generating means including a pulse length multiplier circuit for generating valve-actuating pulses "ti" from said preliminary pulses "tp", said multiplier circuit including a timing capacitor and a charging current force therefor for continuously extending the length of said valve-actuating pulses "ti" in dependence on continuously varying engine load conditions, said load conditions being derived from the duration of said preliminary pulses "tp",

a delaying circuit connected to said charging current source and delaying the onset of charging of said capacitor at least with the full charging current in said multiplier circuit by a predetermined amount of time "t_D" beyond the onset of preliminary pulses "tp", said delaying circuit including a timing circuit additionally triggered by said preliminary pulse and increasing the charging current for said capacitor by a predetermined amount "I_z" after a given time delay, said timing circuit including a voltage divider circuit having a tap, a transistor "T3" whose collector-emitter path is connected with said tap of said voltage divider circuit, and





a transistor "T2" having a base constituting said charging current source, said tap being connected to said base of said transistor "T2" and wherein an input to said transistor "T3" is connected to an RC member whose time constant causes said transistor "T3" to increase the current through said charging transistor "T2" after a predetermined amount of time.

4,278,062

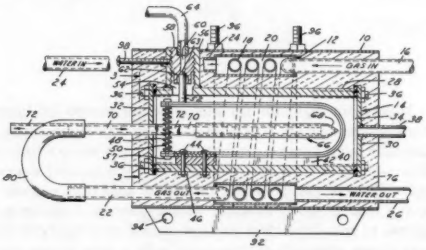
FUEL HEATING DEVICE

Manuel V. DeSilva, 27602 Harper, St. Clair Shores, Mich. 48081

Filed Aug. 17, 1979, Ser. No. 67,292

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—552 **8 Claims**



1. An engine fuel heater for an engine which uses fuel fed to the engine by a fuel line and which exhaust a heated engine medium comprising:

a heat exchanger along the fuel line for transferring heat from the exhaust medium to the fuel;

an insulated vacuum chamber having vent means;

a portion of the fuel line located between the engine and the heat exchanger passing through the chamber;

a temperature sensitive element mounted within the cham-

ber adjacent said fuel line portion and having a portion movable in response to temperature changes in said fuel line portion contacting said vent means;

vacuum means for normally inducing a vacuum within the chamber;

the vent means controlled by movement of said movable portion, the vent means when opened allowing communication of air to the chamber so to eliminate the vacuum normally found therein; and

an exhaust medium control responsive to the presence or absence of a vacuum in the chamber so to control the flow of exhaust medium to the heat exchanger.

4,278,063

INTERNAL COMBUSTION ENGINE WITH AN EXHAUST GAS PURIFYING SYSTEM

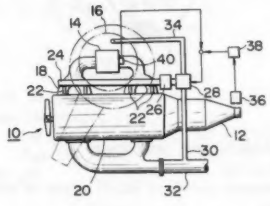
Ken Nakamura, Kawasaki; Kunihiko Sugihara, Takasho, and Shizuo Ishizawa, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Oct. 1, 1979, Ser. No. 80,222

Claims priority, application Japan, Oct. 31, 1978, 53-148892[U]

Int. Cl.³ F02B *47/08*

U.S. Cl. 123—568 **14 Claims**



1. An exhaust gas purifying system for use in an internal combustion engine including at least one combustion chamber connected to an intake port through an intake valve, comprising:

(a) a first passage for passing a portion of exhaust gases discharged from said combustion chamber;

(b) a second passage for passing air;

(c) a fluid passage;

(d) at least one fluid injection nozzle having its one end connected to said fluid passage and the other end extending into said intake port toward said combustion chamber, said fluid injection nozzle adapted to open when said intake valve opens; and

(e) means responsive to engine operating condition for connecting said fluid passage to said first passage to permit injection of exhaust gases through said fluid injection nozzle into said combustion chamber during acceleration and for connecting said fluid passage to said second passage to permit injection of air through said fluid injection nozzle into said combustion chamber during normal operation or idling.

4,278,064

FUEL CONTROL SYSTEM FOR A DUAL-FUELED POWER UNIT

Jose F. Regueiro, Rochester, Mich., assignor to Deere & Company, Moline, Ill.

Filed Mar. 7, 1979, Ser. No. 18,241

Int. Cl.³ F02B *3/12*; F02M *13/00*

U.S. Cl. 123—577 **5 Claims**

1. In an internal combustion engine for driving a variable load and adapted for operation on first and second fuels, wherein a predetermined minimum flow of the first fuel is necessary to maintain combustion, means for adjustably controlling the flow of the two fuels comprising:

first means including a first variable position member for controlling the flow of the first fuel to the engine;

means sensing the position of the first member for providing a first electrical signal representative of the first fuel flow to the engine;

means operatively connected to the first member and responsive to engine speed to vary the position of the member and control the speed;

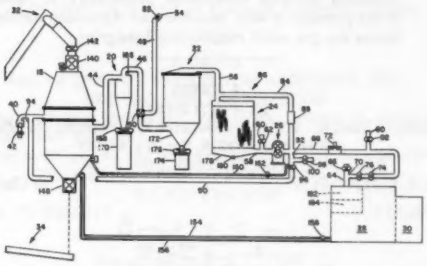
a variable position valve member for controlling the flow of the second fuel to the engine;

means providing a second electrical signal representative of the flow of the second fuel;

means for providing a third electrical signal indicative of the load driven by the engine; and

means for comparing the first and second electrical signals with the third electrical signal and varying the position of the valve member to increase the flow of the second fuel responsive to increases in the flow of the first fuel and in the load.

5. In the combination of an internal combustion engine having a cylinder with first and second inlets connected respectively to sources of first and second fuels so that the cylinder



may be supplied with a mixture of said first and second fuels and an output shaft subject to variable loading, said first inlet having speed-governed means for controlling the flow of the first fuel interposed between the fuel source and the first inlet and including a movable control element, the position of said element varying with output shaft loading, and an adjustable power operated valve interposed between the second fuel source and the second inlet for controlling the flow of the second fuel, the method of electronically controlling the fuel flow comprising the steps of:

measuring the loading of the output shaft and transducing said measurement to a load signal;

sensing the position of the control element and transducing said position to a control element signal;

sensing the power operated valve setting and transducing said setting to a valve signal;

electronically combining the load and control element signals and comparing the combination with the valve signal to generate an error signal; and

transducing the error signal to a power signal for repositioning the valve so as to vary the flow of the second fuel relative to the first in response to changes in output shaft loading.

4,278,065

SLINGSHOT TYPE GUN

Richard L. Wales, Rogue River, Oreg., assignor to Beverly A. Wales and Allen Wilkins, both of Rogue River, Oreg., part interest to each

Filed Apr. 11, 1979, Ser. No. 28,988

Int. Cl.³ F41B *7/00*

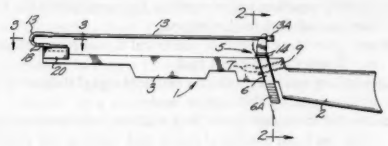
U.S. Cl. 124—20 R **6 Claims**

1. A slingshot type gun comprising,

a gun stock,

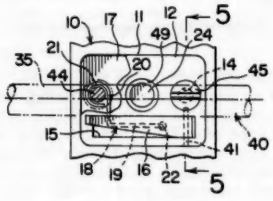
an elongate elastic component mounted to the forward end of said gun stock and adapted to receive a projectile, and

an elastic component release means for momentary retention of a projectile within a doubled back segment of said elastic component, said means including a manually movable member pivotally attached to the gun stock for movement transversely of the longitudinal axis of the gun and said member being elongated and extending above and below the gun stock and swingable relative the remainder



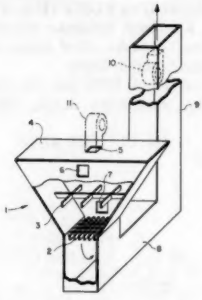
of the means for release of the elastic component and projectile, said manually movable means further including another elongated upright but stationary member also extending above and below the gun stock and coacting with said movable member to retain a projectile and the tensioned elongate component preparatory to release, those portions of said movable and stationary members below the gun stock constituting handgrips.

4,278,066
FLIPPER REST
Alvin G. Zinz, Sr., R.D. #3, Lamberton Rd., Franklin, Pa. 16323
Filed Aug. 8, 1979, Ser. No. 64,840
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—41 A **10 Claims**



1. A support for an arrow supported on a bow comprising,
a rest (**10**),
a block (**11**) having a generally flat side,
a plate (**12**) having a generally flat side,
said plate (**12**) having a first hole (**13**) and a second hole (**14**) formed therein and spaced from each other,
a slot (**15**) formed in said plate and extending through said generally flat side,
said slot being generally parallel to one side of said plate,
a lever (**16**) swingably supported in said slot to swing about one end,
pivot means connecting said lever (**16**) to said plate (**12**),
a recess (**17**) in one side of said block (**11**) in said flat side face,
said recess receiving said plate (**12**) with said generally flat side generally flush with said flat side face,
a spring (**18**),
said spring having an end part (**19**), an intermediate part (**20**), an eyelet (**21**), and spring end (**22**),
the intermediate part (**20**) of said spring (**18**) being disposed at approximately 90° to said end part (**19**),
said eyelet (**21**) being disposed at approximately 30° to said end part (**19**),
said eyelet (**21**) being disposed between said plate (**12**) and said block (**11**) and said end part (**19**) engaging said lever (**16**), urging said lever (**16**) to swing away from said block (**11**) and a screw (**44**) extending through said second hole and through said eyelet (**21**), clamping said plate to said block,
said lever forming a support for supporting one end of an arrow (**40**) on said lever (**30**).

4,278,067
FURNACE
Clinton B. Pike, 21 Willow Rd., Apt. 14, Menlo Park, Calif. 94025
Filed Mar. 15, 1979, Ser. No. 21,163
Claims priority, application New Zealand, Jun. 28, 1978, 186719
Int. Cl.³ F23H *13/00;* **F24H** *3/06*
U.S. Cl. 126—152 R **2 Claims**



1. A downdraft furnace comprising:
a furnace housing;
over said housing a cover or lid, all or part of which may be removable;
within said housing a coarse upper fuel supporting structure or grate on which combustion of large pieces of fuel is initiated;
below said upper fuel grate a finer lower fuel supporting structure or grate on which combustion is completed of fuel which has partially burned on the upper grate and fallen through to the lower grate, and through which burning fuel gases from the first combustion must pass; there being
at least one air inlet for combustion air supply in the portion of the furnace above the upper grate; and
below the lower grate a duct to convey exhaust gases to a chimney or flue;
wherein the housing is in the shape of a hopper; the coarse upper grate is within the hopper; the lower grate is at the base of the hopper and centered with respect to the upper grate; wherein there is at least one additional air inlet for combustion air in the housing walls between the upper and lower fuel grates.

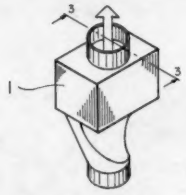
4,278,068
POSI-DRAFT STABILIZER
Anthony W. Butera, 112 Tuthill St., Port Jefferson, N.Y. 11777
Filed Dec. 26, 1979, Ser. No. 107,438
Int. Cl.³ F23J *11/00*
U.S. Cl. 126—307 A **1 Claim**

1. A device to be used in series with the smoke stack of an oil burner which will minimize the adverse effects of downdrafts on the combustion of an oil burner whereby said device also provides the function of an aerodynamic check valve and also can be used in series with the smoke stack of a wood burning, a coal burning, a gas burning stove, or any like duct to stabilize the movement or discharge of gases through said duct, said device comprising of:
an entrance section duct having a substantially circular

configuration and of length to fit securely into a flue gas smoke pipe,

said entrance section joined with a transition section comprising of an end plate and four substantially tapered sides to form a converging duct,

said converging duct protruding into a chamber, said chamber consisting of a length of ducking, with end plates, said ends of the chamber being provided with cutouts,



on one end a cutout to accept the converging discharge of the entrance transition and on the other end a cutout to accept an exit section,

whereby said exit section is comprised of a substantially circular duct and is of suitable length to fit securely into an existing flue gas pipe.

4,278,069

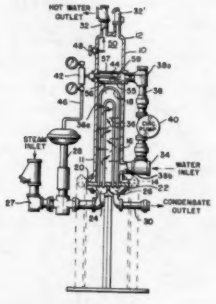
WATER HEATER

John A. Clark, Jr., East Stroudsburg, Pa., assignor to Harsco Corporation, Harrisburg, Pa.

Filed Jan. 31, 1980, Ser. No. 117,071

Int. Cl.³ F24H *1/36*; F22G *5/00*

U.S. Cl. 126—366 **8 Claims**



1. A water heater having an elongated vessel having an open end and a closed end;

heat exchange means received within said open end and defining within the vessel a heat exchange zone occupying a major portion of the volume of the vessel and leaving a minor portion of the volume of the vessel for a storage and blending zone adjacent the closed end of the vessel, the heat exchange means including a bundle of elongated heat exchange elements spaced over substantially the full cross-sectional extent of the vessel, said cross section being perpendicular to the direction of elongation of the vessel, and extending from said open end towards said closed end over the major portion of the length of the vessel;

a cold water inlet located adjacent said open end of the vessel;

a hot water outlet located adjacent said closed end of the vessel in the storage and blending zone and remote from the heat exchange zone; and

means for recirculating water through the heat exchange zone of the vessel including a recirculation conduit, the improvement comprising the conduit having an inlet opening horizontally within the vessel closely adjacent an inner end of the bundle of heat exchange elements for drawing water essentially solely from the heat exchange zone of the vessel and an outlet communicating with the vessel and said cold water inlet adjacent said open end thereof for conduction of water into and through the heat exchange zone; and

control means for controlling the input of heat to the heat exchange means in response to temperature changes in the water coming from the heat exchange zone of the vessel and for stratifying and blending the heated water in the storage and blending zone, the control means including an apertured plate above the heat exchange zone dividing the interior of the vessel, a temperature sensor immediately above said plate, a tunnel mounted on said plate over said sensor and extending across the interior of the vessel, and opening into the recirculation conduit, and side outlet openings in the tunnel adjacent the inlet of the recirculating conduit for flow of heated water to the storage zone, such that the sensor is responsive to a flow of water essentially solely from the heat exchange zone of the vessel.

4,278,070

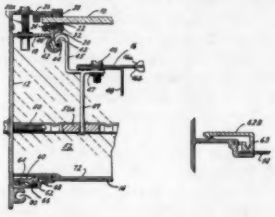
SOLAR ENERGY COLLECTOR ASSEMBLY AND SUB-ASSEMBLIES THEREOF

John C. Bowen, Huntingdon Valley, Pa., assignor to Ametek, Inc., New York, N.Y.

Division of Ser. No. 935,406, Aug. 21, 1978, Pat. No. 4,201,190. This application Aug. 13, 1979, Ser. No. 65,866

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—417 **3 Claims**



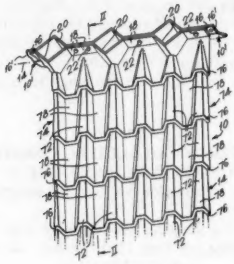
1. In a solar energy collector assembly including elongated side members having a top and bottom edge, a transparent sheet top cover member disposed at the top of said side members, and a bottom closure member disposed at the bottom of said side members, said side members, transparent sheet and closure member together forming an enclosed space housing within which is disposed a solar energy collector means, the improvement consisting of bottom closure member securing means comprising (i) a projection, extending inwardly into said enclosed housing space, along the length of said side members near the bottom thereof, the inner edge of said projection overlapping the outer portion of said closure member along the periphery thereof, said projection including a spring channel retaining tip, along the length thereof, said tip spaced outward from said projection inner edge, and (ii) a spring channel disposed along said inward projection and including a portion abutting said closure member on the surface portion thereof opposite that which overlaps the inner edge of said projection, said spring channel having a mating tip along the length thereof, said tip being disposed outward of said closure member abutting portion, said mating tip engaging and being retained by said inward projection spring channel retaining tip, said engagement comprising a means for preventing inward movement of said spring channel, said spring channel further including a second mating tip outwardly disposed from said

abutting portion and inwardly disposed from said first mating tip, said inward projection also including a second tip engaged with said second mating tip of said spring channel, said spring channel being slightly distended between said engaging tips, said spring channel abutting portion being biased thereby into engagement with said closure member and with the inner overlapping edge of said inward projection.

4,278,071
ROOFING PANELS

Kenneth O. P. Brill-Edwards, Swansea, Wales, assignor to Crescent Roofing Company Limited, Swansea, Wales

Filed Feb. 23, 1979, Ser. No. 13,511
Claims priority, application United Kingdom, Feb. 24, 1978, 7426/78
Int. Cl.³ F24J *3/00*; E04D *13/16*
U.S. Cl. 126—428 **18 Claims**



1. A roof structure for a roof including a ridge and eaves and having pitches between said ridge and said eaves, said structure comprising panels each including an outer skin of an inert structural material for spanning said pitches of said roof from said eaves to said ridge; said panels including ridge and eaves ends; said skin including outer and under sides; a fixing formation means at the ridge ends of the panels to engage the panels and to define a ventilation gap between the adjacent ridge ends of the two panels; integral longitudinal stiffening beams on the undersides of each said outer skin and extending at least substantially from the eaves to the ridge; generally flat inner liners of impervious sheet material sealed along a pair of longitudinal lines to each said outer skin and spaced therefrom by engagement with said longitudinal stiffening beam to define a tunnel between said outer skin and said inner liner extending at least substantially from the eaves to the ridge, said liners having ridge and eaves ends, and means for sealing to each other the ridge ends of said inner liners of said panels on said roof pitches.

4,278,072
FORCED AIR SOLAR HEATING SYSTEM

Thomas L. Ryan, and George T. Kalisz, both of Winslow, Ariz., assignors to Rykal Solar Corporation, Winslow, Ariz.

Filed Aug. 21, 1978, Ser. No. 935,654
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **10 Claims**

8. A solar panel unit for use in a forced air solar heating system and comprising:

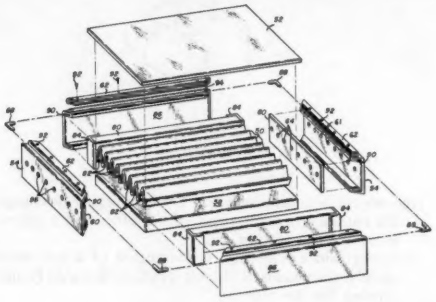
an elongated base member,

an elongated, corrugated absorber member disposed over said base member so that the airspace between said absorber member and said base member forms a plurality of isolated air channels which extend between corresponding first and second ends of said base member and said absorber member,

first end capping means disposed over said first ends of said base and said absorber members, said first end capping means being provided with a first plurality of apertures that are respectively aligned with said plurality of air channels,

second end capping means disposed over said second ends of said base and said absorber members, said second end capping means being provided with a second plurality of apertures that are respectively aligned with said plurality of air channels,

means forming side walls extending upwardly from opposed sides of said base member and along the lengths of both said absorber member and said base member, each end of



said side walls being joined to a corresponding extremity of the first and second end capping means;

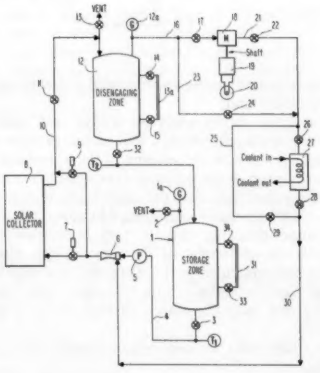
a translucent covering means extending between said side walls and said first and second end capping means and covering said absorber member to form a sealed dead airspace member;

whereby when solar energy passes through said translucent covering means to impinge upon said absorber member, said absorber member becomes heated and in turn heats air flowing through said air channels.

4,278,073
SYSTEM, METHOD AND APPARATUS FOR STORING AND CONVERTING SOLAR ENERGY INTO HEAT AND/OR SHAFT WORK

Pasquale S. Canzano, 31 Candlewicke Rd., Dover, Del. 19901, and Fred D. Canzano, 23 Wall St., Cranford, N.J. 07016

Filed May 7, 1979, Ser. No. 36,833
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—437 **20 Claims**



1. A solar energy conversion system comprising: (a) two normally-liquid and non-reactive working fluids in admixture, the first of said fluids having a relatively low boiling point at

atmospheric pressure and adapted to being readily vaporized at system operating pressures, and the second of said fluids having a relatively high boiling point at atmospheric pressure and not adapted to being vaporized at system operating pressures; (b) solar energy collection means for heating said fluids therein while exposed to sunlight and converting at least a portion of said relatively low-boiling-point fluid from the liquid state to the vapor state; and (c) a continuous circuit for said heated fluids including said collection means, disengaging means downstream of said collection means for separating said relatively low-boiling-point fluid in hot vapor state from said fluids in hot liquid state, storage means downstream of said disengaging means for receiving and storing said fluids in hot liquid state, energy-utilization means downstreams of said disengaging means for receiving said relatively low-boiling-point fluid in hot vapor state and for utilizing at least a portion of the energy contained therein, pumping means downstream of said storage means for feeding said fluids in hot liquid state from said storage means to the solar energy collection means, and mixing means upstream of said collection means and downstream of said energy-utilization means and of said pumping means for mixing said relatively low-boiling-point fluid from said energy-utilization means and said fluids in hot liquid state from said storage means.

11. A continuous process for converting solar energy into useful shaft work and heat and employing two normally-liquid and non-reactive working fluids in admixture, the first of said fluids having a relatively low boiling point at atmospheric pressure and adapted to being readily vaporized at system pressures, and the second of said fluids having a relatively high boiling point at atmospheric pressure and not adapted to being vaporized at system pressures, and said process comprising:

(a) charging said working fluids, in liquid state, into a solar energy collector while said collector is exposed to sunlight, whereby both fluids absorb heat energy and at least a portion of the heated relatively low-boiling-point fluid is converted to the vapor state while the heated relatively high-boiling-point fluid is retained substantially in the liquid state;

(b) conveying the heated vapor and liquid phases from the solar energy collector to a disengaging zone wherein the heated vapor and liquid phases from the collector are separated;

(c) conveying the hot vapor phase from the disengaging zone through energy utilization means whereby the energy contained in said vapor phase is utilized at least in part;

(d) conveying the hot liquid phase from the disengaging zone to a storage zone;

(e) mixing the hot liquid phase from the storage zone with the fluid from the energy utilization means; and

(f) recirculating the admixed fluids to the solar energy collector.

4,278,074

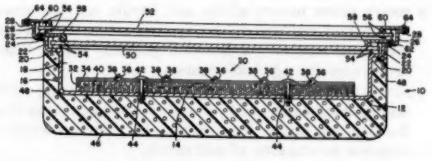
FLAT PLATE SOLAR COLLECTOR

Miroslav Uroshevich, Cincinnati, Ohio, assignor to Alpha Solarco Inc., Cincinnati, Ohio

Filed Jun. 25, 1979, Ser. No. 52,080

Int. Cl.³ F24J 3/02

U.S. Cl. 126—444 **3 Claims**



1. A flat plate solar collector comprising:

a tray formed from low heat conductivity, vacuum formed sheet material of sufficient thickness to form a structural element, said tray including a substantially planar floor portion, integral upstanding, flat wall portions, a flange rim integral with said wall portions and forming a first perimeter frame around said tray, said first perimeter frame including a first outwardly directed flange integral with said first upstanding rim and a second upstanding rim integral with said second outwardly directed flange;

a first pane of glass received in said first perimeter frame and a second pane of glass received in said second perimeter frame to minimize heat losses;

a plate of glass beaded foam insulating material positioned over said planar floor portion;

a layer of relatively thin heat conductive and solar radiation absorbing material positioned on said floor portion of said tray only in direct contact with said glass beaded foam insulating material, said layer being co-extensive with said plate and spaced from said wall portions, said heat conductive material comprising first and second sheets sandwiched together, said sheets having grooves formed therein to form a system of heat transfer fluid passages; and

means extending through said heat conductive material and said glass beaded foam material for securing thin heat conductive material.

4,278,075

PROCESS AND DEVICE FOR THE RECUPERATION OF HEAT FROM SELECTED RANGES OF THE SOLAR SPECTRUM

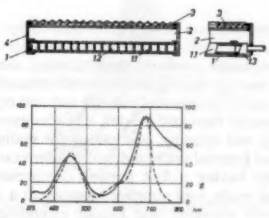
Werner Heierli, Olten, Switzerland, assignor to Heliotherm AG, Basel, Switzerland

Filed Nov. 13, 1978, Ser. No. 959,877

Claims priority, application Switzerland, Nov. 18, 1977, 14219/77

Int. Cl.³ F24J 3/02

U.S. Cl. 126—445 **6 Claims**



1. Method for the recuperation of heat in a partial range of the solar radiation spectrum between 325 and 800 nm wavelength by means of a hollow body permeable to the radiation, through which a liquid is circulated that selectively absorbs radiation in the chosen partial range comprising adding liquid color pigments to the liquid in soluble form or fine dispersion, concentration and mixing ratio of said liquid color pigments adjusted as best as possible for the transmission range of a given spectral curve, said liquid color pigments selected from an organic red pigment such as Bordeaux red or from an inorganic red pigment such as a derivative of ferric oxide and/or from an organic green pigment such as a chlorophyll extract and/or from an organic blue pigment and/or from an organic violet pigment wherein a mixture of said liquid color pigments added to said liquid is composed of 1 part of an organic green pigment; 4 parts of an organic red pigment; and 2 parts of an organic blue pigment, wherein said liquid color pigments are adjusted to the transmission range of a spectral curve having relative maxima of 50% transmission at 450 nm and 90% transmission at 680 nm, coinciding with the light spectrum required for photosynthesis, so that those parts of the spectrum not

required for the photosynthesis of plants are absorbed, and further comprising the step of admixing to said liquid an anti-freezing medium which is of a non-corrosive character to said hollow body and is photometrically indifferent within said further partial range of permeability.

4,278,076

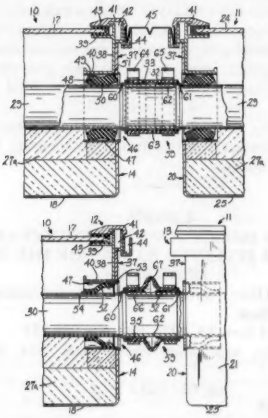
SOLAR COLLECTOR OF A LIQUID HEAT EXCHANGE TYPE

Thomas P. Hopper, Durham, Conn., assignor to Sunworks, Inc., Guilford, Conn.

Continuation of Ser. No. 883,393, Mar. 6, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 101,693

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—450 **9 Claims**



1. In a solar heat collector of the type comprising a housing with an absorber situated therein, said absorber having headers and heat exchange conduits therebetween, means defining a cylindrical passage having internal walls extending through an opening in said housing, said passage and said opening being of greater diameter than said header, a header extending through said passage and opening, and means for sealing the opening between said internal walls and said header comprising a resilient member having a first portion compressively engaging said internal walls, said member tapering to a second portion compressively engaging said header extending therethrough whereby said header may move laterally and longitudinally in said passage.

4,278,077

MEDICAL CAMERA SYSTEM

Morihide Mizumoto, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

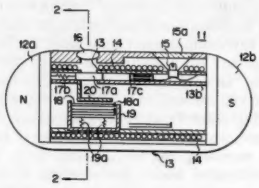
Filed Jul. 24, 1979, Ser. No. 60,008

Claims priority, application Japan, Jul. 27, 1978, 53/91768

Int. Cl.³ A61B *1/00*

U.S. Cl. 128—4 **8 Claims**

1. A medical camera system comprising a capsuleshaped miniature camera being received in a body cavity and a magnetic field generating device including electromagnet means disposed outside a body and a power supply unit for supplying an energizing current to the electromagnet means to permit the electromagnet means to generate a magnetic field, said miniature camera comprising an envelope provided with at least one permanent magnet, a coil disposed in the envelope for inducing an electromotive force from the magnetic field generated by the magnetic field generating device, illumination means provided in the envelope and excited by the electromotive force of the coil for illuminating an object, a shutter device operated by the electromotive force of said coil, a film box disposed in the envelope for containing films, and an optical system for focusing an image of the illuminated object on one of the films contained in the film box.



4,278,078

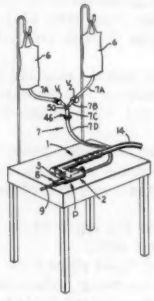
LAVAGE HANDPIECE

William E. Smith, Charleston Township, Kalamazoo Country, Mich., assignor to Stryker Corporation, Kalamazoo, Mich.

Filed Feb. 26, 1980, Ser. No. 124,893

Int. Cl.³ A61H *9/00*

U.S. Cl. 128—66 **10 Claims**



1. A manually manipulable pump unit for effecting a pulsating flow of liquid to a point of treatment in an operating or other surgically related room, the combination comprising:

a housing having an elongated opening therethrough for the reception therethrough of a resilient flexible tubing;

a hollow pedestal upstanding from said housing and a generally elongated tubular handle fixed to the upper end of said pedestal and having its centerline lying in a plane generally parallel with the centerline of the opening in said housing;

a rotary prime mover within said handle and link means within said pedestal driven by said motor for effecting reciprocal motion in a direction generally perpendicular to the centerline of said opening;

a plate within said opening engageable against tubing within said opening and caused to move toward and away from the opposite side of said opening by said link means in response to actuation of said motor;

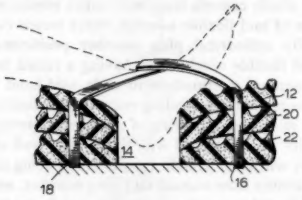
whereby said tubing will be ultimately squeezed and released for effecting a pulsating flow through said tubing in the manner of a peristaltic pump.

4,278,079

NEGATIVE HEEL PROTECTOR CUSHION

Orit Simhoni, 15455 NE. 6th Ave., North Miami, Fla. 33162, and Donna H. Silver, 42 Perimeter Center, NE., Suite 220, Atlanta, Ga. 30346

Filed Jul. 16, 1979, Ser. No. 57,599
Int. Cl.[3] A61B *19/00*; A61F *5/30*
U.S. Cl. 128—149 **3 Claims**



1. A therapeutic support device to prevent or assist in the healing of decubitus ulceration on the heel of the foot comprising:

a resilient body, said resilient body formed from a plurality of individual, resilient foam layers, each layer disposed in a stacked array, each of said layers having a substantially central aperture sized to receive the heel area of a foot with sufficient spacing around the heel area so that the heel area does not contact the surrounding surface formed from the aperture disposed within each layer, the layer apertures being stacked to form a single substantially central aperture in said resilient body, each of said layers having first, second and third and fourth strap receiving apertures, said first and second strap receiving apertures being disposed centrally on one side of central apertufre, and said third and fourth apertures being disposed essentially on the opposite side of said central aperture in each layer; and

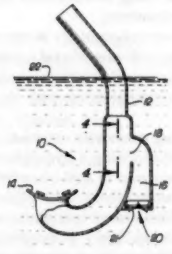
a first strap connected through said first and second apertures in each of said layers and a second strap disposed through said third and fourth apertures in each of said layer, said first and second straps including an adjustable connecting means whereby the ends of said first, second, third and fourth strap can be removably connected to encircle the dorsal part of the foot when the heel is disposed within the central aperture.

4,278,080

DIVING SNORKEL

Joseph N. Schuch, Scarsdale, N.Y., assignor to Under Sea Industries, Inc., Compton, Calif.

Filed Jan. 15, 1979, Ser. No. 3,509
Int. Cl.[3] A62B *7/00*
U.S. Cl. 128—201.11 **5 Claims**



1. In a snorkel structure:

(a) means forming a main snorkel conduit having an unobstructed, unrestricted opening at the top for conducting ambient air to the snorkel conduit when the top of the snorkel conduit projects above the water surface and which allows water to enter when the top of the snorkel conduit is beneath the water surface;

(b) a mouthpiece at the bottom of the snorkel conduit;

(c) a bypass conduit having a first opening connected to the main snorkel conduit at a place spaced substantially from and above said mouthpiece along the snorkel conduit and located between the mouthpiece and the top of the snorkel conduit;

(d) said bypass conduit having a second opening spaced from said first opening located beneath said first opening automatically to drain excess trapped water from the projecting end of the snorkel upon resurfacing following a dive or other maneuver;

(e) a non-return purge valve located at said second opening to block flow of water into said bypass conduit and therethrough to said snorkel conduit; and

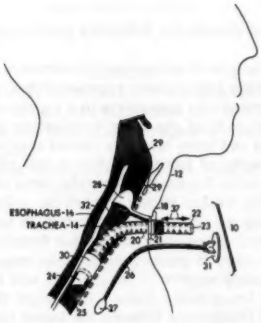
(f) said purge valve being located distant from said mouthpiece whereby a burst of purge air is applied to the water entrapped in the snorkel conduit to lift it out of the snorkel before air vents through the purge valve.

4,278,081

TRACHEAL TUBE

James W. Jones, 4108 James Dr., Metairie, La. 70003

Filed Feb. 21, 1978, Ser. No. 879,078
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—207.15 **32 Claims**



1. A self-inflating and self-deflating tracheal tube apparatus comprising:

a. an elongated hollow tube, said tube having a proximal opening and a distal opening, there being provided a central air conveying bore of uniform unconstricted diameter through said tube from said proximal opening to said distal opening;

b. an inflatable cuff of generally tubular configuration, said cuff having a diameter larger than the diameter of the trachea into which the tube is inserted, said cuff being of a substantially thin flexible film material and further being secured to said tube adjacent the distal end thereof, said cuff being substantially sealed in a fluid-tight fashion to said tube; and

c. air flow control means cooperatively connecting said air conveying bore and said cuff for controlling the flow of air from said bore into said cuff, said means providing a lesser resistance to air flow into said cuff than the resistance of air flow within said air conveying bore, said control means comprising at least one opening connecting said bore and said cuff, said opening having a larger cross sectional area than the cross sectional area of said bore, the flow of air in said tube from said proximal opening to said distal opening so controlled producing a preferred inflation of said cuff, the flow of air in said tube from said

distal end to said proximal end causing said cuff to collapse; and

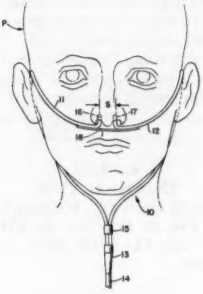
d. means fittable against said tube for restricting the flow of fluids within the trachea, a portion of said means placeable within the trachea above the point of placement of said elongated flexible hollow tube.

4,278,082

ADJUSTABLE NASAL CANNULA

Richard H. Blackmer, 109 Oakwood Dr., Scotia, N.Y. 12302

Filed May 11, 1979, Ser. No. 38,287
Int. Cl.³ A61M *15/08*
U.S. Cl. 128—207.18 **9 Claims**



1. A nasal cannula for delivering gas to a patient, comprising:

a pair of lengths of substantially continuous, constant diameter flexible tubes having opposite ends and means on one of their ends for connection to a supply of gas;

the other ends of the tubes terminating adjacent to one another and being normally curved at an angle relative to the lengths of tubes to define a pair of form-retaining narine tubes for insertion into the nares of a patient; and

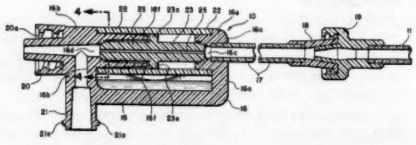
a formable bridge means comprising a length of shape-retaining wire-like material secured to said tubes at said other ends in spanning relationship thereto for holding the narine tubes in predetermined solid angular and spaced relationship relative to one another, said formable bridge means being easily formed to change the angular and spaced relationship between the narine tubes.

4,278,083

FLOW REGULATING DEVICE FOR ARTERIAL CATHETER SYSTEMS

James E. Young, 2080 E. 4675 South, Salt Lake City, Utah 84117; Ralph S. Walker, 9767 N. 6530 West, Highland, Utah 84003, and James R. Chidester, Rte. 1, Box 150 B, American Fork, Utah 84003

Continuation-in-part of Ser. No. 920,500, Jun. 29, 1978, Pat. No. 4,192,303. This application Jun. 7, 1979, Ser. No. 46,234
Int. Cl.³ A61M *5/00*; F16K *51/00*
U.S. Cl. 128—214 R **12 Claims**



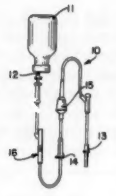
1. A flow regulating device which provides a continuous regulated flow of a medical fluid to an intravenous catheter system used in monitoring arterial functions and in the infusion of medical fluids to an artery or vein, and which also provides for an intermittent, manually controlled, larger flushing flow of fluid to the catheter system, said device comprising a control member having an inlet means adapted to be connected to a source of a medical fluid and an outlet means adapted to be connected to an intravenous catheter; a first passage connecting said inlet and outlet means for fluid communication therebetween, said first passage at least in part comprising a section of flexible conduit fitting coaxially over a cylindrical, hollow extension which extends from said outlet means to about the midsection of said flexible conduit; valve means comprising a substantially cylindrical plug member positioned coaxially within said flexible conduit and having a raised band around the plug member intermediate its ends, said band being positioned adjacent to the extending end of said cylindrical, hollow extension, said band also being of sufficient diameter to form a substantially flow tight seal with the interior wall of said flexible conduit when the flexible conduit is not being squeezed, so that fluid cannot flow around said plug member, and whereby when said flexible conduit is squeezed, it deforms to create the flow channels extending across the band on said plug member, so that said larger, flushing flow of fluid can flow around said plug member and through said first passage; and a second passage by-passing said valve said valve means and connecting said inlet and outlet means, said second passage containing flow restriction means which limits the flow of fluid therethrough, under a given pressure, to a desired amount.

4,278,084

NON AIR-BLOCKING FILTER

J. Lee Pope, Jr., Baltimore, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 19, 1979, Ser. No. 86,462
Int. Cl.³ A61M *5/16*
U.S. Cl. 128—214 R **4 Claims**



1. A medical fluid filter assembly adapted to be suspended substantially vertically, in-line, in a medical fluid administration set, said assembly comprising:

an elongated housing defining an elongated chamber therewithin;

interior wall means extending from end to end within said chamber and dividing said chamber into a pair of adjacent elongated subchambers;

inlet opening means substantially at one end of said housing communicating with one of said subchambers;

outlet opening means substantially at the other end of said housing and communicating with the other of said subchambers;

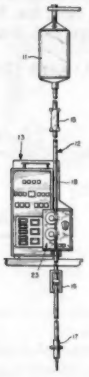
said chamber being otherwise closed to the exterior;

said wall means comprising a hydrophobic filter membrane adjacent said one end of said chamber and a hydrophilic filter membrane adjacent said other end of chamber, whereby said filter assembly is position sensitive, such that when said filter assembly is suspended vertically in an administration set, said hydrophobic membrane is located above said hydrophilic membrane to permit the passage of entrained air bubbles and prevent blockage of the hydrophilic filter.

4,278,085
METHOD AND APPARATUS FOR METERED INFUSION OF FLUIDS

Norm Shim, Glenview, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 13, 1979, Ser. No. 103,041
Int. Cl.[3] A61M 5/00
U.S. Cl. 128—214 F 52 Claims



1. In a flow system for infusing a fluid from a supply reservoir into the human body, having, in combination:

a length of flexible-walled tubing extending from the supply reservoir to the body, said tubing exhibiting incomplete restoration upon repeated compressive cycling thereof;

metering means continuously including at least one pressure means compressively engaged to the sidewall of said tubing for completely occluding the lumen thereof;

drive means for advancing the point of engagement of said pressure means along a segment of said tubing, the lumen of said tubing being repetitively and progressively compressed and restored along said segment to urge fluid through said tubing;

downline pressurization means for continuously at least partially restricting the lumen of said tubing downline of said tubing segment to increase the pressure of the fluid within said segment downline of said point of engagement; the improvement comprising:

upline pressurization means operatively engaging said tubing for increasing the pressure of said fluid in said segment upline of said point of engagement, the increase in pressure of said fluid at said point of engagement assisting in post-compressive reformation of said tubing for improved metering accuracy.

4,278,086
VARIABLE STOP SYRINGE

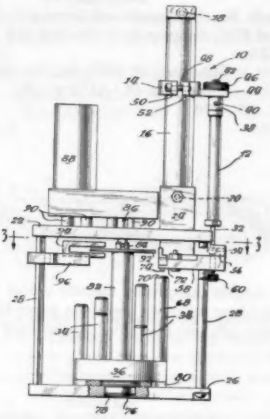
Bruce J. Hodgins, Hialeah; Ivan K. Saltz, Cooper City, and Guenter Ginsberg, Miami, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jan. 28, 1980, Ser. No. 115,624
Int. Cl.[3] A61M 3/00
U.S. Cl. 128—224 19 Claims

1. A method of aspirating and dispensing one of a plurality of predetermined fluid volumes from a fluid supply comprising:

selecting one of the fluid volumes; moving a plunger stop corresponding to said selected fluid volume into a fully aspirated position;

driving a syringe plunger coupled to the fluid supply from a rest or fully dispensed position to the fully aspirated position defined by said plunger stop to aspirate said selected fluid volume; and

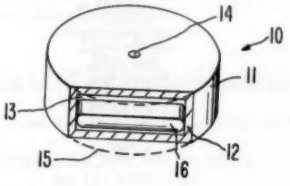


driving said plunger from the fully aspirated position to said fully dispensed position to dispense said selected fluid volume.

4,278,087
DEVICE WITH INTEGRATED OPERATIONS FOR CONTROLLING RELEASE OF AGENT

Felix Theeuwes, Los Altos, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Apr. 28, 1980, Ser. No. 144,211
Int. Cl.[3] A61M 7/00
U.S. Cl. 128—260 9 Claims



1. An osmotic device for delivering an agent to an environment of use, said device comprising:

(a) a shaped wall formed of a material that is permeable to the passage of an exterior fluid present in the environment of use, and substantially impermeable to the passage of agent, the wall surrounding and forming;

(b) a compartment;

(c) an osmotic system in the compartment, which system comprises a body formed of depots of agent osmotic solute dispersed in a polymer that is impermeable to the passage of solute and permeable to the passage of fluid, with the depots surrounded substantially individually by a layer of polymer;

and

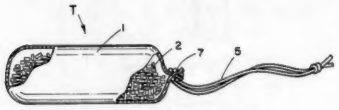
(d) a passageway in the wall communicating with the compartment and the exterior of the device for delivering agent from the device to the environment of use.

4,278,088

BAG TAMPON CONTAINING DISCRETE PIECES OF ABSORBENT

William G. Reeves, Neenah, and Douglas C. Thomas, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 22, 1979, Ser. No. 87,226
Int. Cl.³ A61F *13/20*
U.S. Cl. 128—270 **4 Claims**



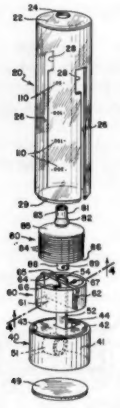
1. A tampon comprising discrete pieces of a compressed, rigid dry-shape retaining absorbent paper-like matt primarily containing cellulosic fibers loosely dispersed in a fluid-permeable bag.

4,278,089

WOUND DRAINAGE DEVICE

Charles M. Huck, Oldwick; John E. Studer, Flemington, both of N.J., and Philip H. Sauer, Indian Rocks Beach, Fla., assignors to Howmedica, Inc., New York, N.Y.

Filed Nov. 9, 1978, Ser. No. 959,161
Int. Cl.³ A61M *1/00*
U.S. Cl. 128—278 **17 Claims**



1. A device for removal of fluids from a wound comprising:

a. a housing having side walls and at least one end wall at one end thereof, said end wall having an opening;

b. an airtight and watertight passive bellows disposed within the housing, the passive bellows being collapsible and expandable and having an upper and a lower end;

c. means for communicating with the interior of the passive bellows;

d. means for maintaining the upper end of the passive bellows adjacent said end wall of the housing;

e. means for collapsing the passive bellows within the housing; and

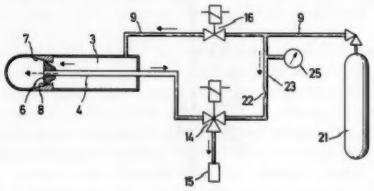
f. constant force expansion means for automatically expanding the passive bellows from its collapsed state such that a substantially constant level of negative pressure is created within the passive bellows so as to provide for the removal of fluids from the wound at a substantially constant rate of suction throughout the range of evacuation, said expansion means including a constant force spring assembly being disposed outside the passive bellows and being secured to the housing and the passive bellows.

4,278,090

CRYOSURGICAL DEVICE

Hans van Gerven, Tübingen, Fed. Rep. of Germany, assignor to Erbe Elektromedizin KG, Tübingen, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 56,961
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1978, 2831199
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 **5 Claims**



1. Cryosurgical instrument with a probe for cooling limited zones of biological tissues, including a thermally conductive probe tip having a hollow inner chamber, into which a supply duct leads through a constricted exit gap, through which duct a gas is suppliable for cooling the tip, on the basis of the Joule-Thomson effect resulting from gas flow through the exit gap, a discharge duct having first and second ends, said first end communicating with said inner chamber and said second end being open to the atmosphere, said discharge duct extending within and coaxial with respect to said supply duct, said instrument having also a valve adjustable from the outside for control of the operating temperature of the probe tip, and further comprising the improvement which consists in that

said discharge duct **(4)** is displaceable in the axial direction relative to the supply duct **(3)** surrounding it, said first end of said axially movable discharge duct has a conical member arranged symmetrically around the axis of said discharge duct, with the base of said conical member facing in the direction of said inner chamber, the end of said supply duct adjoining said inner chamber having a conically tapered inner wall arranged symmetrically around the axis of the supply duct, said tapered inner wall being narrowed in the direction away from said inner chamber and said gap being formed between the edge of the base of said conical member and said inner wall of said supply duct, the size of said gap being adjustable by moving said discharge duct axially with respect to said supply duct,

said conical member and said tapered inner wall being sized and positioned such that when said duct is moved axially in the direction away from said inner chamber, the edge of the base of said conical member will ultimately come in contact with the tapered inner wall of said supply duct, and

said tapered inner wall narrows more strongly than the taper of said conical member.

4,278,091

SOFT TISSUE RETAINER FOR USE WITH BONE IMPLANTS, ESPECIALLY BONE STAPLES

Rocco R. Borzone, Emerson, N.J., assignor to Howmedica, Inc., New York, N.Y.

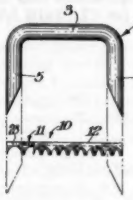
Filed Feb. 1, 1980, Ser. No. 117,685
Int. Cl.³ A61B *17/04, 17/08*
U.S. Cl. 128—334 C **12 Claims**

1. In combination

a bone staple comprising a transverse portion and a plurality

of legs integral with said transverse portion, said legs being substantially parallel, and

a tissue retention element separable from said staple and comprising a base having an upper face and a lower face, means receiving said legs so that said retention element can slide upon said legs to a limiting position in which said



upper face abuts said transverse portion, and a multiplicity of teeth distributed upon and extending from said lower face,

said teeth being capable of piercing adjacent soft tissue when said staple is driven into the bone structure of a patient, whereby said retention element holds said soft tissue in place relative to said bone structure.

4,278,092

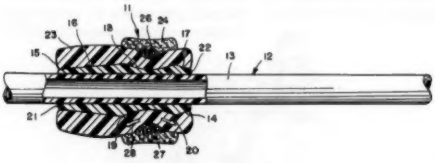
PERITONEAL CATHETER

Alexander S. Borsanyi, Corona del Mar, Calif.; Peter Ivanovich, Wilmette, Ill., and Urte Vaughan, Denver, Colo., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 5, 1979, Ser. No. 54,709

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—348 **12 Claims**



1. A peritoneal catheter including a tube section and a retainer section, said tube section comprising an elongated flexible plastic tube for delivering and withdrawing dialysate and a relatively rigid tubular plug permanently secured to and extending about an intermediate portion of said tube, said plug having tapered longitudinal surfaces adjacent the ends thereof and having an annular recess between said tapered surfaces, said retainer section comprising a resilient sleeve having a bore for sealingly and releasably receiving said plug and having a porous resilient tissue ingrowth ring secured to the outer surface of said sleeve, whereby, following a term of implantation of said catheter, said tube section may be removed from a patient for cleaning or replacement without necessitating removal of said retainer section and without disturbing the ingrowth of tissue into said ring.

4,278,093

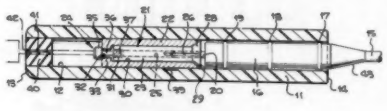
INTERCHANGEABLE PACEMAKER CONNECTOR FOR LEADS

Ray Lafortune, Chatsworth, and Waldemar Heeb, Sepulveda, both of Calif., assignors to American Technology, Inc., Northridge, Calif.

Continuation-in-part of Ser. No. 693,943, Jun. 8, 1976, abandoned. This application Apr. 8, 1977, Ser. No. 785,928

Int. Cl.² A61N *1/36*

U.S. Cl. 128—419 P **13 Claims**



1. In a cardiac pacemaker having an electric operating mechanism encapsulated in a case and a bore having opposite ends extending to the exterior of the case, the combination of an electric lead connecting fixture comprising a sleeve adapted to be anchored in said bore intermediate the opposite ends and electrically connected to said operating mechanism, said sleeve having an axial recess with an open end and an end wall at the opposite end, a flared portion in the recess, an opening through the end wall with internal threads, a collet comprising a shank with a sliding fit in said recess, a flared portion on said collet complementary to said flared portion in the recess, and a pocket in said shank for reception of an electric lead, said flared portion of the collet and a portion of the shank having slots providing for relative gripping movement, a hole at the end of the shank adjacent said end wall of the recess having internal threads matching the internal threads of the opening in the sleeve, and a captive collet draw screw comprising a shaft with a head at one end, a free end of said shaft having external threads complementary to said internal threads of the sleeve and the collet and a nonthreaded portion between the head and the external threads longer than the length of the internal threads in said sleeve and of diameter less than the minor diameter of said internal threads whereby said screw is rotatably retained in said sleeve, said collet being releasable and removable for replacement with a collet having a pocket of different inside configuration for reception of an electric lead of corresponding different configuration.

4,278,094

PACEMAKER WITH PULSE WIDTH ADJUSTMENT CIRCUITRY

Don W. Zobel, Mesa, Ariz., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 10, 1979, Ser. No. 83,374

Int. Cl.³ A61N *1/36*

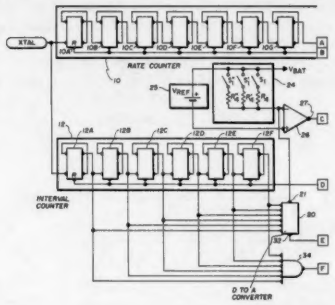
U.S. Cl. 128—419 PG **6 Claims**

1. In an electromedical pulse generator used to stimulate a selected portion of an animal body, said generator of the type having terminal means adapted for connection to an electrical lead and having power source means and electrical pulse generating means electrically connected to the power source means for supplying output pulses at a predetermined rate to the terminal means, each pulse having a predetermined nominal pulse width and a predetermined pulse energy, the improvement comprising:

(a) timing means for providing a digital output signal having a value proportional to the elapsed time following generation of the leading edge of an output pulse;

(b) digital to analog converter means connected to said timing means for receiving said digital output signal therefrom and to said power source means to provide an analog output signal representative of said digital output signal which increases with time at a rate inversely proportional to the voltage of said power source; and

(c) comparator means connected to receive the analog output signal from said digital to analog converter means,



said comparator means constructed and arranged for providing a signal to terminate said output pulse when said analog output signal reaches a predetermined level.

4,278,095

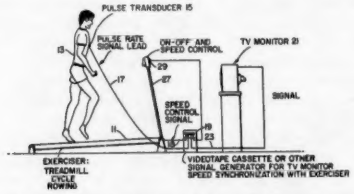
EXERCISE MONITOR SYSTEM AND METHOD

Pierre A. Lapeyre, P.O. Box 430, Houma, La. 70360

Continuation of Ser. No. 831,666, Sep. 12, 1977, abandoned. This application Jun. 5, 1979, Ser. No. 45,627

Int. Cl.[3] A61B *5/04*

U.S. Cl. 128—689 **2 Claims**


PULSE TRANSDUCER 15
PULSE RATE SIGNAL LEAD
ON-OFF AND SPEED CONTROL
TV MONITOR 21
SPEED CONTROL SIGNAL
SIGNAL
EXERCISER: TREADMILL CYCLE ROWING
VIDEOTAPE CASSETTE OR OTHER SIGNAL GENERATOR FOR TV MONITOR SPEED SYNCHRONIZATION WITH EXERCISER

1. A user controlled exercise monitoring system for user selection of an exercise program within a programmed heartbeat range comprising the combination:

(a) a movable variable speed exerciser powered exercise mechanism movable at a variably controlled speed selectable by the physical activity of an exercising user in an aerobic type exercise program,

(b) a variable speed visible display system providing a scene observable by the user while powering said mechanism to produce a movable pattern related to the aerobic exercise and movable at a variable speed controlled by said exercise mechanism,

(c) manually actuated speed control means accessible to the exerciser for changing the speed of the movable pattern while powering said mechanism connecting the mechanism to the display for variably controlling at the command of the user the relative speed of said movable pattern with respect to the exercise mechanism,

(d) and heartbeat detection means including a sensor for operably coupling to the exercising user and conversion equipment for displaying continuously the heartbeat pulse rate of the exerciser user on said visible display as an auxiliary display visible along with said scene with an alarm indication when the pulse rate departs from a specified target zone, thereby to permit the user at his option by control of his exercise speed to maintain a vigorous exercise program over a sustained time period while observing whether the pulse rate is within said target zone.

4,278,096

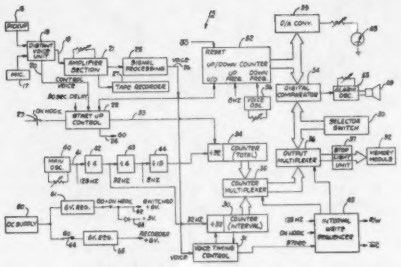
CORONARY ARTERY DISEASE DIAGNOSIS METHOD

Ernest H. Friedman, 1831 Forest Hills Blvd., Cleveland, Ohio 44112; Charles M. Flammer, Brighton, Mass.; Daniel A. Baker, St. Joseph, Mich., and Spiro Vamvakas, Rocky River, Ohio, assignors to Ernest H. Friedman, East Cleveland, Ohio

Continuation-in-part of Ser. No. 851,285, Nov. 14, 1977, Pat. No. 4,156,423. This application May 2, 1979, Ser. No. 35,394

Int. Cl.[3] A61B *5/00*

U.S. Cl. 128—695 **8 Claims**



1. The method of diagnosis of the existence of clinical coronary artery disease in a human subject, comprising the steps of:

having the subject utter oral speech,

obtaining from said speech a determination of the hesitation pauses of absence of vocal sounds within the speech uttered by the subject which pauses are in excess of a given time interval in the order of one second of time,

determining the number of such pauses in a period of time of speech of the subject, and

indicating the existence of clinical coronary artery disease where the rate of such pauses is in excess of a value in the order of two pauses per minute.

4,278,097

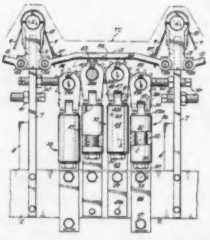
HUSKING MACHINE

Ronald L. Anderson, 1698 Best La., Eugene, Oreg. 97401, and Harry T. Kessler, Jr., 4460 Mill, Eugene, Oreg. 97405

Filed Dec. 4, 1979, Ser. No. 100,247

Int. Cl.[3] A01F *7/02*

U.S. Cl. 130—5 D **7 Claims**



1. A husking machine for removing an exterior portion of produce articles and comprising,

a frame,

processing lanes having husking rolls with irregular surfaces and arranged in inclined juxtaposed pairs with each pair having a main and a secondary roll in interengagement with one another, said rolls having corresponding onloading and offloading ends with the onloading ends elevated relative to said offloading ends, the main and secondary roll of each pair driven so as to cause their uppermost

surfaces to move toward one another to jointly act on the produce articles, the main rolls of each pair in close juxtaposition to one another, the main rolls of said juxtaposed pairs driven so as to cause their uppermost surfaces to move away from one another so as to move produce articles deposited thereon toward their respective secondary rolls, the produce articles discharged from the offloading ends of the rolls after passage downward therealong,

power transmission means in driving engagement with said rolls,

each of said husking rolls having shaft ends, and

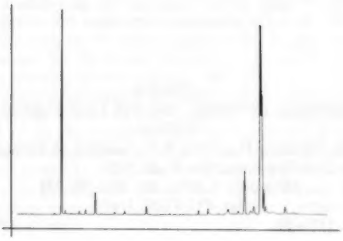
bearing assemblies on said frame each including a bearing receiving a roll shaft end, said bearing assemblies further including a pin having a horizontal axis transverse to the roll axis and about which said bearing may move.

4,278,098

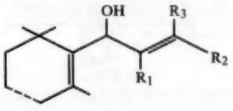
2,6,6-TRIMETHYL-α-(ISO)PROPENYL-1-CYCLOHEXENE-1-METHANOLS AND -1,3-CYCLOHEXADIENE-1-METHANOLS AND ORGANOLEPTIC USES THEREOF

Richard A. Wilson, Westfield; William L. Schreiber, Jackson; Braja D. Mookherjee, Holmdel, all of N.J.; Jacob Kiwala, Brooklyn, N.Y.; Joaquin F. Vinals, Red Bank, N.J.; Manfred H. Vock, Locust, N.J.; Gilbert Stork, Englewood, N.J., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 39,361, May 15, 1979, Pat. No. 4,243,823.
This application Feb. 8, 1980, Ser. No. 119,858
Int. Cl.³ A24B *3/12, 15/36*
U.S. Cl. 131—276 **3 Claims**



1. A flavored smoking tobacco comprising smoking tobacco and intimately admixed therewith an organoleptic property augmenting or enhancing quantity of at least one compound defined according to the structure:



wherein one of R_1, R_2 or R_3 is methyl and the other two of R_1, R_2 and R_3 is hydrogen; wherein the dashed line represents a carbon-carbon double bond or a carbon-carbon single bond with the proviso that when R_1 is hydrogen, the dashed line represents a carbon-carbon double bond.

4,278,099

SMOKING DEVICE

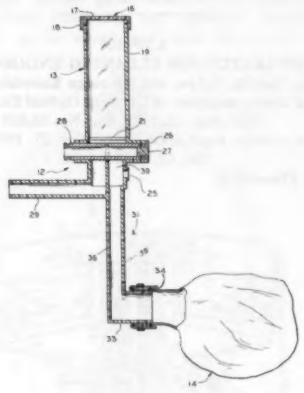
Evan Jacobsen, 231 S. Lombard, Oak Park, Ill. 60302

Filed Nov. 30, 1979, Ser. No. 98,744
Int. Cl.³ A24F *3/00, 47/00*
U.S. Cl. 131—178 **11 Claims**

1. An improved smoking device comprising smoking material container receiving means,

a viewing compartment juxtaposed to said smoking material container receiving means for receiving smoke from burning, smoking material within said smoking material container receiving means,

stem means for directing air through said smoking material container receiving means to force smoke from said container to said viewing chamber,



storage bag means for storing the smoke after viewing and prior to inhaling, and

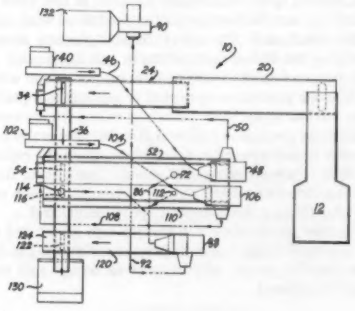
connecting means for connecting said viewing compartment to said storage bag means.

4,278,100

METHOD AND APPARATUS FOR SEPARATING TOBACCO FROM REJECTED CIGARETTES

Richard E. Thatcher, Chesterfield, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 953,859, Oct. 23, 1978, abandoned.
This application Sep. 5, 1979, Ser. No. 72,646
Int. Cl.³ A24C *5/36*
U.S. Cl. 131—196 **8 Claims**



1. A method for separating shredded cigarette tobacco filler from the wrappings of formed cigarettes to recover such tobacco for further useful processing, said method comprising

subjecting the cigarettes to a ripping operation to break up said cigarettes and rip the wrappings thereof an thereby loosen the tobacco therein,

depositing the cigarettes on a vibrating screen unit sized to pass tobacco shreds therethrough but to retain the wrappings and tobacco therein while flowing two air streams in generally horizontally disposed courses from opposite ends of the screening unit, to maintain an aerodynamically

induced suction lift condition over said screening unit to float the wrapping materials a distance above the surface of said screening unit, the said two streams having a point of merger intermediate said ends from whence said streams flow vertically codirectionally upwardly to carry off wrapping materials entrained therein, and

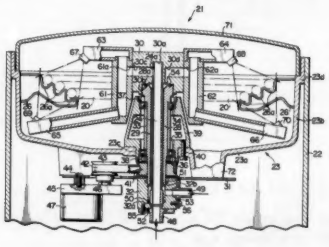
collecting the tobacco passing through said screening unit.

4,278,101

APPARATUS FOR CLEANING ENDOSCOPE

Masahiro Tanaka, Tokyo, and Katunaga Konoshima, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Aug. 29, 1979, Ser. No. 70,620
Claims priority, application Japan, Nov. 27, 1978, 53-146300
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—167 C **8 Claims**



1. An apparatus for cleaning an endoscope, said apparatus comprising:

a rinse vessel adapted to receive a portion of an endoscope to be cleaned, said rinse vessel having a center and an outer wall;

support means in said rinse vessel defining a conical support plane around said center of said rinse vessel, said support means being for supporting one or more endoscope portions in said conical support plane;

first and second spray heads; said first spray head being disposed in said rinse vessel relatively near said center of said rinse vessel as compared with said second spray head and second spray head being disposed in said rinse vessel relatively near said outer wall as compared with said first spray head; said first spray head including means for spraying the endoscope portion in a first direction generally perpendicular to said conical support plane when the endoscope portion is supported in said support plane, and said second spray head including means for spraying the endoscope portion in a second direction generally perpendicular to said conical support plane when the endoscope portion is supported in said support plane, said first and second directions being directly opposite to each other;

means for feeding liquid to said spray heads; and

drive means for rotating said spray heads about said center of said rinse vessel and said spray heads rotating in respective parallel planes with respect to which said support plane is inclined.

4,278,102

DISASTER ACTIVATED SHUT-OFF VALVE

Charles H. Kelley, 12023 Rock Crest Rd.; Jimmie W. Crane, 11936 Rock Crest Rd., and Albert D. Ray, 12140 Rock Crest Rd., all of Lakeside, Calif. 92040

Filed Mar. 19, 1979, Ser. No. 22,050
Int. Cl.³ F16K *17/36*
U.S. Cl. 137—39 **5 Claims**

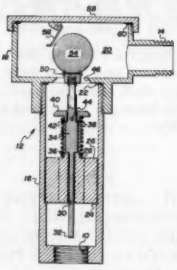
1. A vibration shut-off valve comprising:

(a) a valve body defining a gas flow passageway;

(b) a valve seat disposed in said passageway;

(c) a valve movable between a seated and an unseated position and having means biasing same into a seated position to block said passageway;

(d) a pedestal mounted in said body for limited vertical movement and including a mechanical linkage between said pedestal and said valve head to hold said valve head in said open position when said pedestal is depressed; and



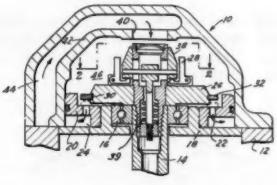
(e) a weight ball balanced on said pedestal within said flow passageway depressing said pedestal to maintain said valve head unseated and capable of being dislodged from said pedestal either by an inordinant surge of gas flow within said passageway by virtue of the disposition of said ball in said flow passageway, or by the vibration of an earthquake, to free said valve head to move into said seat, thus blocking gas flow in said low passageway.

4,278,103

OVERSPEED CONTROL MEANS FOR PNEUMATIC TOOLS

David A. Giardino, Deerfield, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Jan. 7, 1980, Ser. No. 109,775
Int. Cl.³ F01C *21/12*
U.S. Cl. 137—50 **6 Claims**



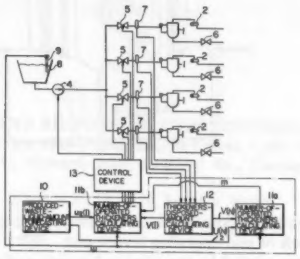
1. An overspeed control means for a pneumatic tool including a valve seat arranged to separate chambers of the tool exposed to pneumatic medium used for motivation of the tool, said valve seat being formed with a plurality of openings allowing flow of pneumatic medium from one chamber to the other chamber, a cage member affixed to a rotor shaft of the tool for rotation therewith, and a plate valve carried by the cage member, said plate valve being arranged to be released from the cage member upon development of a predetermined rotor shaft rotational speed, said plate valve upon release from the cage member being movable to cover said openings to restrict flow of pneumatic medium between the chambers causing termination of shaft rotation, said plate valve being in the form of a flat ring which has a gap allowing radial expansion of the valve.

4,278,104

SYSTEM FOR CONTROLLING THE NUMBER OF WASTE LIQUID DISPOSAL UNITS IN OPERATION

Hiroshi Yajima, Kawasaki; Norihisa Komoda, Yokohama, and Susumu Horiuchi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 29, 1978, Ser. No. 937,854
Claims priority, application Japan, Sep. 9, 1977, 52-107813
Int. Cl.³ G21F *9/08*
U.S. Cl. 137—118 **3 Claims**



1. A system for controlling the number of waste liquid disposal units in operation, comprising a plurality of the waste liquid disposal units, first means for temporarily storing the waste liquid to be supplied to said waste liquid disposal units, second means for supplying said waste liquid from said waste liquid storage means to said waste liquid disposal units, third means for measuring the amount of waste liquid U_1 stored in said storage means at the present time, fourth means for forecasting the amount of waste liquid $U_2(I)$ flowing into said storage means for the period of time from the present time to each of a plurality of given time points I wherein $I \leqq N$ where N is a predetermined maximum period of time, fifth means for calculating the amount of waste liquid V(I) capable of being disposed of by the presently-operated waste liquid disposal units for the period of time from the present time to each of the given time points I, sixth means for calculating the maximum number m of the disposal units which simultaneously satisfies the following inequality for all of the points I satisfying the relation $0<I<N$,

$$U_1+U_2(I) \geqq V(I)+mV'(I)$$

where V'(I) is the amount of waste liquid processed by each one of said waste liquid disposal units for the period of time from the present time to each of the given time points I, and seventh means for controlling the operation of said plurality of said waste liquid disposal units according to the output of said sixth means.

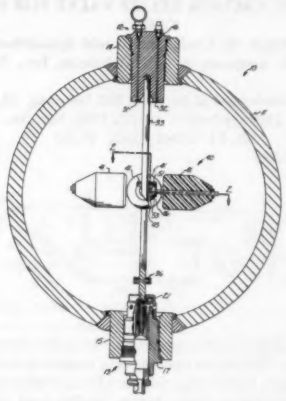
4,278,105

SPHERICAL ACCUMULATOR WITH BUOYANT FLOAT

Paul C. Koomey, Houston, Tex., assignor to Koomey, Inc., Houston, Tex.

Filed Feb. 4, 1980, Ser. No. 118,467
Int. Cl.³ B67D *5/54*; F16K *51/00*
U.S. Cl. 137—207 **6 Claims**

1. In a guided-float accumulator comprising a vessel in the shape of a cylinder or sphere adapted to contain high fluid pressures, mouth means for the vessel including at least a fill mouth at the bottom of the vessel, fluid outlet means associated with closure means for the fill mouth for connection of the vessel and its contents to a hydraulic system such as used in an oil well blowout preventer, a normally open shut-off valve associated with the fill mouth in series with the fluid outlet means, and float means movable in the vessel along a vertical guide member according to the liquid level within the vessel to thereby close off the shut-off valve and prevent the escape of pressurized gas from the vessel into the hydraulic system proper when the liquid level within the vessel becomes low, the fluid outlet means and shut-off valve being removable from the association with the fill mouth to open the fill mouth when the system is shut down for repair, the improvement which comprises provision of the float means as a float array comprising a plurality of float elements supported on collar means surrounding the vertical guide member, said float elements being sequentially removable and insertable through said mouth means for the vessel, said collar means and vertical



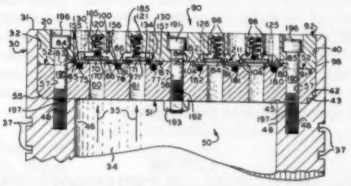
guide member also being removable and insertable through said mouth means, interlock means associated with said collar means and each of said float elements for deploying said float elements as a generally horizontal array radiating from said collar means, said interlock means being manipulatable from the exterior of said vessel through said mouth means to couple said interlock means following insertion of one or more of said float elements and said collar means and vertical guide member, and to uncouple said interlock means for removal and replacement of one or more of said float elements.

4,278,106

PLATE CHECK VALVE

William W. Cunningham, P.O. Box 425, Exeter, Calif. 93221

Filed Sep. 20, 1979, Ser. No. 77,161
Int. Cl.³ F16K *15/08*
U.S. Cl. 137—512.1 **16 Claims**



1. A repairable check valve for refrigeration systems and the like comprising:

A. a housing having a plurality of flat concentric annular faces radially separated by annular spaces through which exhaust ports extend;

B. flat annular seats individually removably fitted against the faces in radially spaced relation to define annular passages therebetween in communication with the ports;

C. flat annular valve plates individual to the annular passages marginally overlapping the seats which define their respective annular passages for movement between posi-

tions in sealing engagement with their respective seats and positions retracted therefrom; and

D. a cage releasably connected to the housing and therewith defining a chamber containing the faces, seats, and plates and the cage providing passages communicating with the annular passages between the seats when the plates are retracted.

4,278,107

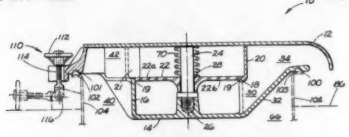
AUTOMATIC VACUUM RELIEF VALVE FOR HOPPER CARS

Richard H. Dugge, St. Louis, and Arnold Schlobohm, Ballwin, both of Mo., assignors to ACF Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 932,796, Aug. 11, 1978, abandoned. This application Apr. 7, 1980, Ser. No. 137,690

Int. Cl.³ F16K *15/02, 45/00*

U.S. Cl. 137—526 **21 Claims**



1. An automatic vacuum relief valve assembly comprising: a top cover plate closing an opening in a container to the atmosphere; a vacuum relief valve mounted horizontally and spaced below said top cover plate; means biasing said valve into closed position engaging a valve seat located below said top cover plate and below said valve; said valve in said closed position closing communication between the inside of the container and the outside atmosphere, and in open position allowing communication between the container and the outside atmosphere; a plurality of first passageways providing fluid communication between the lower surface of the valve and the outside atmosphere; a plurality of second passageways spaced from said first passageways providing fluid communication between the inside of the container and the upper surface of said valve when said valve is in closed position; said first and second passageways being located below said top cover plate; the cross sectional area of said first passageways throughout their length being substantially at least equal to the cross sectional area of said valve and the cross sectional area of said second passageways through their length being at least equal to the cross sectional area of said valve; whereby when the pressure inside the container becomes less than atmospheric pressure, atmospheric pressure will cause the valve to move upwardly away from its seat and allow air to enter the container and whereby when the pressure in the atmosphere and in the tank are substantially equalized, the valve will return to the seated position; and whereby for a given available valve cross sectional area the volume of air flow into the container from the atmosphere is maximized for a given pressure drop from the atmosphere into the container.

4,278,108

CONTROL MECHANISM FOR TWO CUT-OFF DEVICES MOUNTED IN SERIES

Severin Casacci, Corenc, France, assignor to Neyrpic, Corenc, France

Filed Mar. 10, 1980, Ser. No. 128,561

Int. Cl.³ F16K *5/20, 31/12*

U.S. Cl. 137—613 **5 Claims**

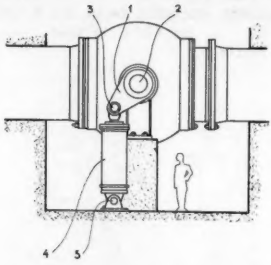
1. A hydraulic valve assembly, particularly for use in a high-drop hydraulic turbine installation, said valve comprising:

dual rotary valves arranged in tandem, said valves each having a casing which is rigidly interconnected with the casing of the other of the valves in series flow relationship;

a rotary valve member within each casing;

a journal associated with the valve member of each valve and which extends diametrically through the casing and terminates at at least one of its ends exteriorly of the casing;

an operating lever rigidly attached at one end to said one exteriorly extending end of each of said journals;



a hydraulic jack journalled at one of its ends to the other end of each of said operating levers; and

a member carried by the other valve casing of each of said valves and which provides a support for an opposite end of each of said hydraulic jacks.

4,278,109

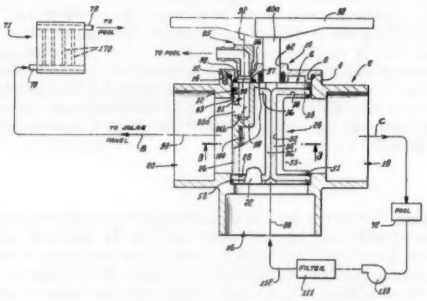
THREE PORT VALVE WITH DRAIN PASSAGE

Robert Ortega, Rancho Mirage, Calif., assignor to Purex Corporation, Lakewood, Calif.

Filed Jan. 28, 1980, Ser. No. 116,033

Int. Cl.³ F16K *11/085*

U.S. Cl. 137—625.47 **6 Claims**



1. In a valve that includes:

(a) a valve body having a cavity, and first, second and third openings communicating with said cavity,

(b) a rotary valve member in said cavity, said valve member having a generally cylindrical exterior surface and an internal hollow with an end opening in alignment with said first opening,

(c) the valve member having a side opening positioned at substantially a right angle with respect to said end opening, the valve member being rotatable to bring the side opening into or out of alignment with said second opening or said third opening so as to establish flow communication between the first and second openings, or between the first and third openings, via said end and side openings in the valve member,

(d) the valve body having an additional opening and located generally in alignment with said first opening,

(e) there being a removable closure member on the valve body and extending over said additional opening, and means for rotating the valve member, said means extend-

ing through the closure member, the improvement comprising

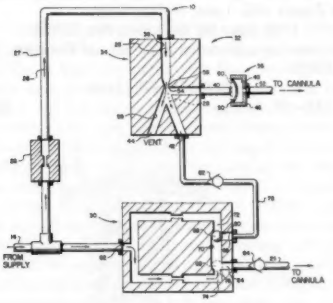
(f) a drain passage having a first portion in the closure and a second portion in the rotary valve member, said portions being brought into endwise communication when the side opening in the rotary valve member is in alignment with one of said second and third openings.

4,278,110

DEMAND RESPONSIVE FLOW CONTROLLER

Ernest H. Price, 1266 Pepper Dr.. El Centro, Calif. 92243, and Douglas C. Howard, 3004 Stratford Dr., Chesapeake, Va. 23321

Filed Nov. 13, 1979, Ser. No. 93,919
Int. Cl.³ F15C *1/12*
U.S. Cl. 137—805 **5 Claims**



1. For use in a respiration system for the administration of oxygen from a supply conduit through a delivery conduit and cannula to a patient, a demand responsive flow controller comprising, in combination:

a flow restrictor adapted to be coupled to the supply conduit for conducting a control power stream;

an on/off fluidic valve having an inlet port adapted to be coupled to the supply conduit, an outlet port adapted to be coupled to the delivery conduit, and a valve control port for closing and opening a fluid flow path between said inlet and outlet ports in response to the application and removal of the control power stream to and from the valve control port, respectively;

a fluidic switch having an inlet port coupled to the output of the flow restrictor, a gate control port for receiving a respiration signal, a discharge port coupled to said valve control port through which the control power stream is conducted only in response to a respiration signal at said control port corresponding with expiration, and a vent port communicating to atmosphere through which the power stream is conducted only in response to a respiration signal at said control port corresponding with inspiration; and,

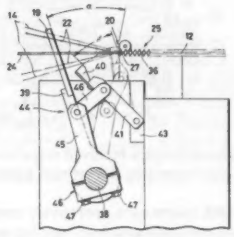
a fluidic transducer adapted to be coupled in fluid communication with the cannula and and including means in movable engagement with the gate control port of the fluidic switch for producing the respiration signals by opening and closing said gate control port to ambient pressure in response to cannula pressure fluctuations corresponding with inspiration and expiration, respectively.

4,278,111

APPARATUS FOR MANUFACTURING A WOVEN SLIDE FASTENER STRINGER

Kihei Takahashi; Seiko Terada, both of Uozu, and Masaatsu Oofusa, Kurobe, all of Japan, assignors to Yoshida Kogyo, K.K., Tokyo, Japan

Filed Oct. 25, 1979, Ser. No. 87,980
Claims priority, application Japan, Oct. 31, 1978, 53-134924
Int. Cl.³ D03D *49/68*
U.S. Cl. 139—35 **4 Claims**



1. An apparatus for manufacturing a slide fastener stringer including a woven stringer tape and a coiled fastener element woven into the stringer tape along a longitudinal edge thereof, said apparatus comprising:

(a) means for weaving the stringer tape of warp threads and a weft thread, said weaving means including means for forming a shed of the warp threads, means for inserting the weft thread through the warp shed, and first reed means including a shaft rockable through a predetermined angle and a first beating member mounted on said shaft for beating the weft thread in the warp shed against the fell of the tape;

(b) a mandrel for extending substantially along the warp threads, said mandrel having a portion to be located adjacent to the fell of the stringer tape being woven,

(c) means for coiling a monofilament on a conical orbital path around said mandrel to form the coiled fastener element to be woven into the stringer tape by the weft thread;

(d) second reed means including a second beating member pivotably between a beat-up position and a retracted position for beating successive coupling heads of the coiled fastener element one after another against a point which is in alignment with the fell of the stringer tape; and

(e) connecting means comprising a rocking arm mounted on said shaft of said first reed means and a link connected at opposite ends to said rocking arm and said second beating member for synchronizing the beating action of said second reed means with that of said first reed means.

4,278,112

YARN FEEDER

Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo, K.K., Tokyo, Japan

Filed Jul. 17, 1979, Ser. No. 58,252
Claims priority, application Japan, Jul. 18, 1978, 53-87980
Int. Cl.³ D03D *47/36*
U.S. Cl. 139—452 **13 Claims**

1. A yarn feeder comprising:

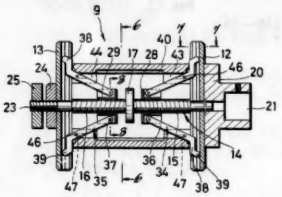
(a) a pair of spaced plates substantially parallel to each other;

(b) a single spindle between said plates rotatably supported on said plates and including a pair of externally threaded portions having opposite thread directions, each of said plates having a plurality of guide slots extending radially of said spindle and angularly spaced from each other, the guide slots in said plates being arranged in axially aligned pairs;

(c) a pair of threaded carriages carried on said spindle hav-

ing respective threads engaging a corresponding one of said pair of threaded portions, respectively, and simultaneously movable toward and away from each other in response to rotation of said spindle;

(d) a plurality of bars extending axially along and disposed radially around said spindle equidistantly spaced in a circumferential direction, each of said bars having a pair



of end portions slidably received respectively in the guide slots in a corresponding one of said axially aligned pairs; and

(e) a pair of link means each operatively connected between one of said carriages and said bars for moving said bars longitudinally parallel to said spindle and radially outwardly from and inwardly toward said spindle in response to rotation of said spindle.

4,278,113

METHOD AND APPARATUS FOR DISTRIBUTING A DISINTEGRATED MATERIAL ONTO A LAYER FORMING SURFACE

Torsten B. Persson, Maarslet, Denmark, assignor to Scan-Web i/s, Risskov, Denmark

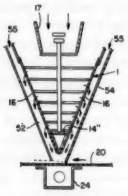
Continuation-in-part of Ser. No. 862,035, Dec. 19, 1977, Pat. No. 4,157,724, which is a continuation of Ser. No. 717,384, Aug. 24, 1976, abandoned. This application Dec. 20, 1978, Ser. No. 971,360

Claims priority, application United Kingdom, Aug. 27, 1975, 35429/75; Sep. 18, 1978, 37205/78

The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.

Int. Cl.³ B65B *1/14, 1/16*

U.S. Cl. 141—1 **39 Claims**



1. Apparatus for depositing and distributing loose fibers or particles onto a surface of a moving carrier web comprising:

(a) supply means for supplying a flow of fiber or particle laden air;

(b) air separator means for receiving said fiber or particle laden air and separating the air from fibers or particles contained therein, said air separator means having air discharge means and separated fiber or particle discharge means;

(c) a housing having inlet means and outlet means for said fibers or particles, said inlet being in communication with said separated fiber or particle discharge means;

(d) a moving carrier web having a surface positioned adjacent the outlet end of said housing;

(e) screen means within said housing between said inlet and outlet means, at least part of said screen means being arranged so as to extend in a manner which is transverse and non-parallel with respect to the surface of the moving carrier web;

(f) agitator means within said housing for creating a flow of said particles or fibers about an axis extending in a plane that extends normal to said surface and parallel to a direction of movement of said carrier web, and for directing said particles or fibers outwardly against and through said screen means; and

(g) means for directing particles or fibers passing through said screen means to said moving carrier web whereby said particles or fibers are deposited in a layer upon said moving carrier web.

4,278,114

KITCHEN APPLIANCE FOR STORING PERISHABLE GOODS

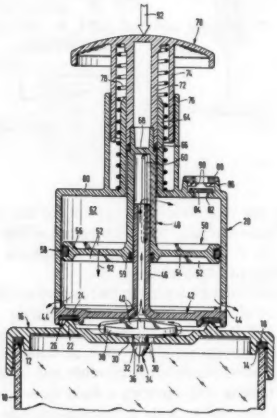
Richardt E. Ruberg, St. Gallen, Switzerland, assignor to Zyliss Zysset AG, Lyss, Switzerland

Filed May 14, 1979, Ser. No. 38,806

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821852

Int. Cl.³ B65B *31/04*

U.S. Cl. 141—65 **10 Claims**



1. A kitchen appliance comprising

at least one container for perishable goods,

a container lid sealingly connected with said container and provided with a check valve only permitting air flow out of the container, and

a manually operable suction piston pump sealingly engageable with said lid,

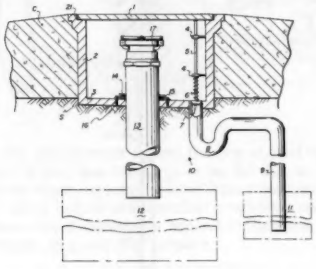
wherein the lid has an annular sealing rib embracing said check valve and adapted to engage an elastic sealing ring at the pump, and

wherein the pump is designed such that a suction stroke acting upon its piston enhances the engagement between said sealing ring and said lid rib, the pump having a suction chamber adjacent the piston and progressively increasing in size in response to the suction stroke to draw air from the container, and the pump having a check valve connected with the suction chamber and only permitting expulsion of air to the ambient from the suction chamber.

4,278,115
DEVICE FOR CAPTURING AND RETAINING SPILT FLUIDS

Wallace E. Briles, 309 Yoakum Pkwy., Apt. 506, Alexandria, Va. 22304, and Robert W. Dubin, 11508 E. Maple Ave., Beltsville, Md. 20705

Filed Aug. 6, 1979, Ser. No. 63,747
Int. Cl.³ B65B *3/06*
U.S. Cl. 141—86 9 Claims

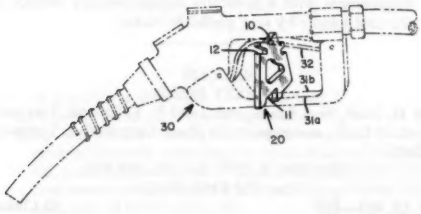


1. A device for capturing and retaining fluid spilled while filling a main storage tank having a fill pipe comprising, in combination, a manhole including a floor having an opening and a side wall defining an interior, said manhole having an open upper end for access to said manhole interior, said fill pipe extending upwardly from said main storage tank into said manhole interior through said floor opening for access through said manhole open end, means for sealing the intersection between said fill pipe and said manhole floor opening, said sealing means being adapted to permit relative movement between said fill pipe and said manhole floor, a holding tank, a drain pipe having a lower end communicating with said holding tank and an upper end opening into said manhole floor whereby fluid spilt onto said manhole floor during the filling of said main storage tank flows into said drain pipe upper end, down said drain pipe and into said holding tank.

4,278,116
PORTABLE LATCH FOR GASOLINE NOZZLES

Gerald R. Opp, 1231 Hewitt Ave., St. Paul, Minn. 55104

Filed Sep. 20, 1979, Ser. No. 77,318
Int. Cl.³ B65B *3/04*; B67C *3/00*
U.S. Cl. 141—392 3 Claims

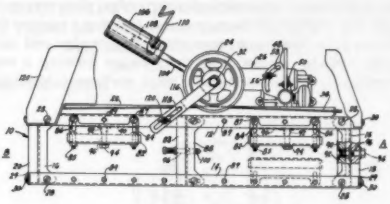


1. A portable gasoline dispensing nozzle trigger latching device adapted for controlling gasoline flow delivery rate in one or more predetermined positions, comprising a member having a recessed portion along a bottom edge for seating against a gasoline dispensing nozzle frame and having a top edge shaped for seating against a gasoline dispensing nozzle trigger to hold said trigger in a first predetermined position, said member having a first side edge notched a predetermined distance away from said top edge, said side notch sized to accept said gasoline dispensing nozzle trigger and to hold said trigger in a second predetermined position.

4,278,117
THREE DIMENSIONAL DUPLICATING CARVING MACHINE

Richard L. Mitchell, Florissant; Richard B. Brundage, Ladue, both of Mo., and Donald L. Blachly, Excelsior Township, Sauk County, Wis., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 10, 1979, Ser. No. 73,744
Int. Cl.³ B27C *5/00*
U.S. Cl. 144—144 R 10 Claims



1. A three-dimensional carving machine comprising; a frame having an upper horizontal surface, a horizontal shaft movable perpendicular to its axis along said surface, an elongated, rigid, box-like carriage having flat vertical sidewalls extending perpendicular to said shaft, said shaft passing through apertures in said sidewalls near one end of said carriage and said carriage being freely rotatable on and freely slidable along said shaft, a pair of flat plates lying against said flat carriage sidewalls on opposite sides of said carriage and near the other end thereof, a router mounting bracket lying against one of said plates at one side of said carriage, a router mounted in said bracket, a first bolt passing through apertures in said mounting bracket, said plates and said carriage sidewalls and having a nut thereon which when tightened holds said mounting bracket and said plates against said carriage sidewalls and prevents rotation thereof on said first bolt, said plates each having an arcuate slot therein with its center of curvature on said axis of said first bolt, a second bolt passing through said arcuate slots and through apertures in said carriage sidewalls and having a nut thereon which when tightened additionally holds said plates against said sidewalls, said mounting bracket and said plates each further including a portion thereof extending radially from the axis of said first bolt outwardly beyond said carriage sidewalls, a rod fixed at one end in said portion of said mounting bracket and extending therefrom parallel with said first and second bolts and through apertures in said portions of said plates, and a stylus mounted on the other end of said rod whereby said rod and said stylus may be swung in an arc about the axis of said first bolt limited by the length of said arcuate slots when said nuts on said first and second bolts are loosened.

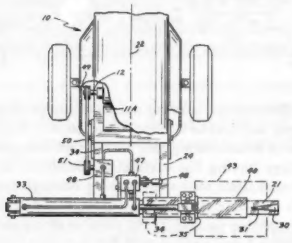
4,278,118
LOG SPLITTER FOR GARDEN TRACTORS

Dennis L. Larson, 8547 Hyde Ave. South, Cottage Grove, Minn. 55016

Continuation of Ser. No. 914,667, Jun. 9, 1978, abandoned. This application Jul. 5, 1979, Ser. No. 54,802
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A 4 Claims

1. A self contained log section splitter attachment for a self propelled garden tractor having a tractor support frame extending in fore and aft direction with wheel means for supporting said tractor frame and an engine for normally powering the garden tractor, and including a power take off means, said attachment being mountable and removable from a garden tractor as a unit and comprising a generally horizontal elongated main frame member, support means comprising a pair of spaced plates fixed to the main frame member, said plates being positioned on opposite sides of a tractor support frame on which the attachment is mounted and attached thereto, said

support means mounting said main frame in position extending transverse to the fore and aft direction of said garden tractor support frame and to the direction of normal movement of the garden tractor, said support means positioning the main frame so that the ends of the main frame extend laterally beyond both sides of the garden tractor, a splitting wedge fixedly mounted adjacent a first end of said main frame member, hydraulic cylinder means mounted on said generally horizontal main frame member on an opposite end thereof from said splitting wedge, said hydraulic cylinder means including a movable portion operable under hydraulic pressure and movable toward and away from said splitting wedge, plate means on the upper side of the main frame member forming a support for log sections to be split between said splitting wedge and said hydraulic cylinder means, said plate means forming a support comprising a plate having side edge portions extending out-



wardly beyond the side edges of other portions of said main frame member on both sides thereof, the side edge portions of said plate means forming guide members extending in direction of movement of said movable portion of said hydraulic cylinder means, said movable portion having guideway receiving members slidably mounted over and guided by the side edge portions of said plate means, means mounted in the center portion of said main frame member between the sides of a garden tractor on which it is mounted comprising a hydraulic valve and hydraulic pump operable to operate said hydraulic cylinder to force a log section on the support means against said cutting wedge, means forming a hydraulic fluid reservoir carried by said support means for connection to the hydraulic pump and valve, and drive means operable between the power take off of a garden tractor on which the log section splitter attachment is mounted and said hydraulic pump to drive said pump.

4,278,119

STORAGE MEANS FOR REMOVABLE TIPS FOR HAND TOOL

Charles E. Elmore, Clarkson, Ky., assignor to Vermont American Corporation, Louisville, Ky.

Filed Jan. 7, 1980, Ser. No. 109,831
Int. Cl.[3] B25G *1/08*
U.S. Cl. 145—62 **7 Claims**

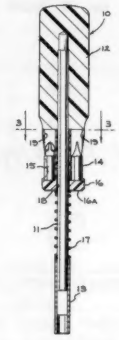
1. In combination with a hand tool including a shaft having on one of its two opposite ends a handle and on the other of its two opposite ends socket means for selectively receiving and holding a removable tool tip, improved means for storing a plurality of removable tool tips, comprising:

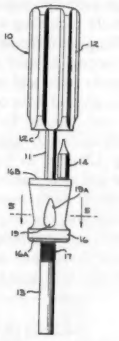
(a) a generally cylindrical storage member having a bore along its long central axis that is mounted on the tool shaft for slideable movement between the tool handle and socket means,

(b) said storage member also having a first surface that faces said socket means and is engaged by yieldable means that encircles the tool shaft and extends between and is compressed between said first surface and the socket means,

(c) said storage member further having a second surface opposite from said first surface that is provided with openings into a plurality of chambers which are radially and angularly spaced apart around said bore and are aligned generally parallel to the long central axis of the tool shaft,

(d) said chambers each having a width and depth sufficient to slideably receive and store any tool tip intended to be removably received and held by the socket means, and





(e) said chambers each extending toward said first surface of said storage member from one of said openings in said second surface thereof, with said second surface being yieldably urged away from the socket means and into engagement with a generally complementary surface of the tool handle by said yieldable means.

4,278,120

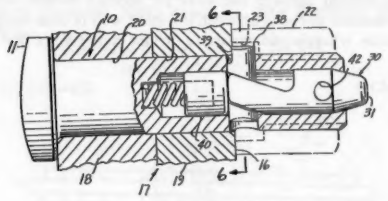
SAFETY BOLT

Dale H. Hart, Seal Beach, and Josef F. Volkmann, Torrance, both of Calif., assignors to Hi Shear Corporation, Torrance, Calif.

Filed Oct. 5, 1978, Ser. No. 948,662
Int. Cl.[3] F16B *39/32*
U.S. Cl. 411—190 **13 Claims**

1. A safety bolt comprising: an element having a shank with an axis, the element having a first end and a second end, an axial passage opening onto one of said ends, and a laterally-extending passage in the shank and intersecting the axial passage; a dog in said laterally-extending passage slidably movable between an extended and a retracted position, whereby the dog extends beyond the maximum diameter of the shank in the extended position and retracts entirely within said shank in the retracted position, thereby being adapted to abut the back side of a workpiece into which the shank is inserted; a non-rotatable cam member axially movable in said axial passage and reactive with said dog to retract and to extend the same; bias means

biasing the cam member in its direction which forces the dog toward its extended position, the dog when extended while the shank is fully inserted in the workpiece preventing the removal of the bolt from the workpiece; a retraction attachment which when attached into said open end of said axial passage axially



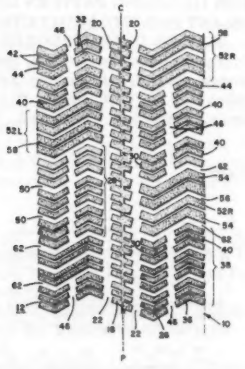
presses the cam member against the dog in axial opposition to the force of said bias means to cause the dog to retract; and attachment means removably to hold the retraction attachment to said safety bolt in said attached condition, said retraction attachment being completely separable from the assembly of said element, dog and cam member.

4,278,121

ALL-SEASON PNEUMATIC TIRE TREAD

Peter McDonald, Hudson, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 23, 1979, Ser. No. 96,967
Int. Cl.³ B60C *11/06, 11/08*
U.S. Cl. 152—209 R **17 Claims**



1. A tread for a pneumatic tire comprising:

(a) a circumferentially extending central rib;

(b) an intermediate intermittent and an outer intermittent but circumferentially extending rib on each side of said central rib, said intermediate rib being placed so as to provide two continuous circumferentially extending grooves, one on each side of said central rib;

(c) a plurality of laterally continuous cleats placed in circumferentially spaced relation about the tire transversely outward of said central rib and extending laterally outward to the closest respective tread edge, said circumferentially spaced relation of said lateral cleats being such that at least two laterally spaced cleats are in contact with the road surface during every footprint of said tire;

(d) said lateral cleats and intermittent ribs being so placed as to provide a lateral slot adjacent to each of said lateral cleats extending from each of said circumferential grooves laterally outward to the closest respective tread edge;

(e) said intermediate and outer ribs being so placed as to provide a discontinuous partly-circumferentially extending groove therebetween, said latter groove being in communication with said lateral slots adjacent said cleats; and

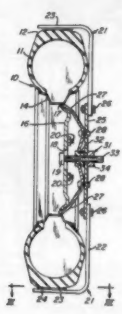
(f) each of said intermittent ribs having circumferentially spaced portions including multiple segments, said segments being so circumferentially spaced as to provide a plurality of lateral slots extending from each of said circumferentially extending grooves transversely outward to the closest respective tread edge.

4,278,122

TRACTION DEVICE FOR A VEHICLE WHEEL

Ernest Vagias, 265 Prospect St., Baden, Pa. 15005

Filed Dec. 3, 1979, Ser. No. 99,781
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—225 C **9 Claims**



1. A traction device for a vehicle wheel assembly which includes a tire with a treadwall portion supported by a rim having spoke portions with spoke openings therebetween and a hub section removably supported by a vehicle axle member, said traction device comprising a plurality of traction arms each having a shank portion carrying an angularly-projecting traction finger for extending transversely to the treadwall portion of said tire, a carrier plate to support the shank portion of said traction arms while extending radially along the side of said rim outwardly from said hub section, a plurality of support arms supported by said carrier plate to extend radially therefrom so that a rim-engaging portion at one end of each support arm projects into said spoke openings, and actuator means between said carrier plate and the vehicle axle member to force said support arms together with said carrier plate into a position where the rim-engaging portion of each support arm engages against said rim within the spoke hole portions thereof, said actuator means being arranged so that the reaction force to the support force developed by the support arms on the rim is applied to said vehicle axle member.

4,278,123

SIMPLIFIED FOUNDRY CORE MAKING MACHINE AND METHOD

Harold R. Goss, Richmond Heights, and Edward J. Rebish, Euclid, both of Ohio, assignors to Acme-Cleveland Corporation, Highland Heights, Ohio

Filed Mar. 12, 1979, Ser. No. 19,424
Int. Cl.³ B22C *13/12, 17/10*
U.S. Cl. 164—28 **17 Claims**

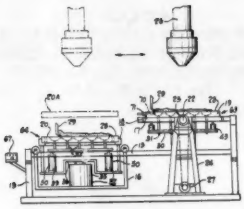
1. The method of making a foundry core in a machine having first and second core boxes, the first core box being pivotally supported on a frame with a vent plate on the side of the pivotable support opposite to the first core box, the first core box being pivotable between first and third stations, and the second core box being movable by booking means into a second station vertically below the first station,

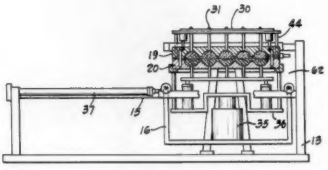
comprising the steps of:

filling the first and second core boxes with a binder-containing hardenable molding mix,

moving the second core box upwardly in the second station by the booking means to press the mix therein against the vent plate and form a vent groove into a surface of the second core box mix,

at least partially hardening the binder in the molding mix in at least the first core box,





inverting the vent plate and first core box to move the first core box from the third to the first station to have the first core box face downwardly,

applying an adhesive on at least one surface between the two core box mixes,

moving the second core box upwardly in the second station by the booking means to adhere together the two core box mixes, and

ejecting the completed core from a core box in one of said first and second stations.

4,278,124

METHOD OF PRODUCING HOLLOW STEEL INGOT AND APPARATUS THEREFOR

Kazuo Aso, Okayama; Takesaburo Nishioka, Tokyo; Takemi Yamamoto; Naomichi Miyai, and Jun-ichi Matsuno, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Mar. 26, 1979, Ser. No. 23,892

Claims priority, application Japan, Apr. 11, 1978, 53-42410; Sep. 25, 1978, 53-118376

Int. Cl.[3] **B22D** *27/04*

U.S. Cl. 164—125 **8 Claims**

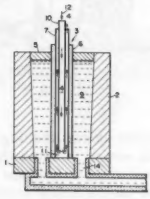
1. A method of producing hollow steel ingots comprising the steps of:

disposing a cylindrical core in a central portion of a cast iron mold installed on a stool wherein said core comprises a first steel pipe disposed in the central portion of said mold, a second steel pipe is disposed within said first steel pipe and concentrically therewith, a cylinder of granular refractory material filling up the space formed between said first and second steel pipes and a third steel pipe further disposed within said second steel pipe and concentrically therewith;

feeding molten steel from below into said mold; and

cooling the inner surface of said core with a gas stream descending into said third pipe from above and ascending inside the second pipe such that the finally solidifying position of the molten steel fed is set at a position which is apart from said core at a distance of 20% to 50% the wall thickness of said steel ingot.

5. A casting apparatus for producing a hollow steel ingot comprising a cast iron mold installed on a stool, a cylindrical core disposed in the central portion of said mold and pouring gates formed through the stool for feeding molten steel at intermediate portions between the inner wall of said mold and the core, wherein said apparatus further comprises: a first steel



pipe disposed in the central portion of said mold; a second steel pipe disposed within said first steel pipe and concentrically therewith; said core made of granular refractory material filled up in a space formed between said first and second steel pipes; a third steel pipe further disposed within said second steel pipe and concentrically therewith; and a gas flow course for cooling the core descending into said third steel pipe from above and then ascending inside said second pipe.

4,278,125

SYSTEM FOR HANDLING PATTERN DEVICES IN A MOLDING PLANT FOR THE PRODUCTION OF MOLD HALVES IN MOLD BOXES

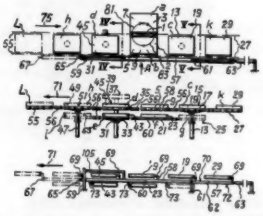
Erwin Bührer, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Nov. 14, 1979, Ser. No. 94,115

Claims priority, application Switzerland, Nov. 15, 1978, 11715/78

Int. Cl.[3] **B22C** *25/00*

U.S. Cl. 164—412 **7 Claims**



1. A system for handling pattern devices in molding apparatus for producing mold halves in mold boxes comprising: a rotatable transfer device including a pair of diametrically opposed tables which are periodically shifted between a waiting position and an operating position; and conveyor track means including a portion thereof defined by one of said pair of tables which is in said waiting position; said conveyor track means being formed to define a closed circulation path extending toward opposite sides of said table in said waiting position; said conveyor track means comprise a first and a second conveyor track, wherein said second conveyor track operates to convey said pattern devices in a direction opposite to the direction of said first conveyor track, wherein said second conveyor track contains said table at said waiting position, and wherein said system further includes at least two transfer devices which

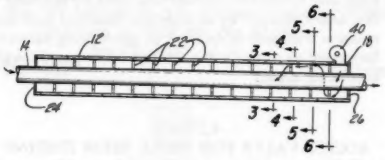
connect said first and said second conveyor tracks with each other.

4,278,126

HEAT EXCHANGER FOR FURNACE FLUE

Frank M. Skrzypek, 50682 Bower Dr., New Baltimore, Mich. 48047

Filed May 5, 1980, Ser. No. 146,475
Int. Cl.³ F28D *7/10*
U.S. Cl. 165—122 **9 Claims**



1. A heat exchanger for recapturing and recirculating heat usually lost from a furnace flue, said heat exchanger comprising:

an elongated tubular housing including opposed end walls with an aperture in each end wall dimensioned to receive the furnace flue therethrough, and having an inlet near one end and an outlet near its other end, said housing defining a flow chamber surrounding said flue;

first means for producing an air flow axially through said chamber from said inlet to said outlet;

second means for directing the air flow about the flue, within the chamber as the air flow passes through said chamber; and

wherein said second means comprises a plurality of axially spaced plates extending transversely across said chamber, each of said plates having at least one eccentrically aligned aperture, said at least one aperture of each plate being arcuately displaced by an amount substantially less than 180° and in a predetermined direction of rotation with respect to said at least one aperture of its adjacent upstream plate whereby said air flows through said housing in a substantially helical path around the flue.

4,278,127

APPARATUS FOR RETRIEVING DRILL COLLARS

E. Edward Rankin, Wellheads Ind. Centre Unit D-14, Aberdeen (Dyce), Scotland AB2 OEZ

Filed Feb. 23, 1979, Ser. No. 14,899
Int. Cl.³ F42B *3/00;* **E21B** *29/00*
U.S. Cl. 166—63 **3 Claims**

1. In combination with an earth boring drill string having drill pipe secured above a number of drill collars, the drill collars having a greater wall thickness than the drill pipe, a sub adapted to be secured between sections of drill collars, comprising:

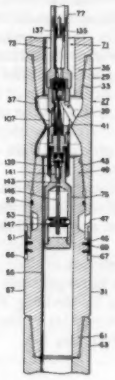
a cylindrical first member adapted to have a first end secured to one of the drill collars and having a set of internal threads located between the first end and a second end; and

a cylindrical second member having a set of external threads on a first end adapted to engage the internal threads of the first member, and a second end adapted to be secured to another drill collar, the second member having an external annular shoulder spaced from the external threads that contacts the second end of the first member when fully made up;

the second member having an annular band located between the external shoulder and the external threads that is of wall thickness sufficiently thin for enabling a radial explosive charge capable of parting drill pipe to be lowered on a wire line adjacent the annular band and initiated to part the drill string at the annular band, allowing the drill collars located above the parted sub to be retrieved; and

a port formed in the first member adjacent the annular band for fluid circulation should perforation of the annular band be desired.

3. A method of retrieving drill collars located in an earth boring drill string above a stuck point, the drill collars being tubular members having greater wall thickness than the wall thickness of the drill pipe, the method comprising:



providing a hollow sub with an annular band of reduced wall thickness capable of being parted by a radial explosive lowered on wireline;

mounting the sub between two of the drill collars as the drill collars are being lowered into the well;

after the drill string has become stuck, lowering on wireline the radial explosive through the drill collars and into the sub adjacent the annular band; and

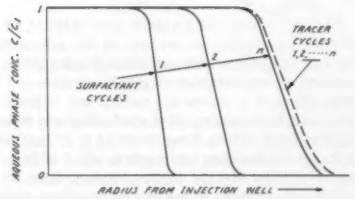
firing the radial explosive and applying tension to the drill string to part the sub at the annular band, retrieving the drill collars located above the sub.

4,278,128

PETROLEUM RECOVERY CHEMICAL RETENTION PREDICTION TECHNIQUE

Abdus Satter; Richard H. Widmyer; Yick M. Shum, all of Houston, and Curtis E. Howard, Porter, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,964
Int. Cl.³ E21B *47/00, 49/00*
U.S. Cl. 166—250 **9 Claims**



SURFACTANT AND TRACER CONCENTRATION PROFILES IN A CYCLIC TEST

1. A method for determining the amount of a chemical that is retained within a core undergoing a chemical flooding operation comprising:

(a) conducting a first injection-soak-production cycle in a

core with a volume of a fluid which comprises the retained chemical and a non-retained tracer material;

(b) obtaining from a produced fluids concentration profile of the tracer the core volume contacted and a dispersion parameter describing the dispersion effects for a non-retained material within the core;

(c) obtaining retention parameters for the retained chemical by history-matching the actual produced fluids concentration profile of the retained chemical with a simulated produced fluids concentration profile of the retained chemical for this cycle obtained from a chemical flood mathematical model of the core;

(d) simulating within the chemical flood mathematical model at least one more injection-soak-production cycle in the well utilizing a fluid of the same volume and comprising the same concentration of the retained chemical as in step (a) until such time as the simulated produced fluid concentration profile of the chemical is essentially the same as the actual produced fluid concentration profile of tracer from step (a);

(e) determining the amount of chemical retained within the contacted core volume by summing the amount of the chemical retained in step (a) and the amounts of the chemical retained in the simulated cycles of step (d); and

(f) determining the amount of the chemical that is retained per unit volume by those portions of the core undergoing the chemical flood by dividing the summed amount of chemical retained in step (e) by the core volume contacted in the cyclic test from step (a).

4,278,129

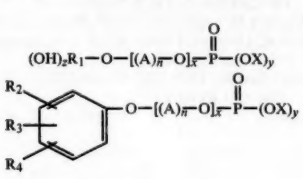
STIMULATION OF OIL AND GAS WELLS WITH PHOSPHATE ESTER SURFACTANTS

William B. Walton, Cleburne, Tex., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed May 30, 1980, Ser. No. 154,651
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—263 **10 Claims**

1. A method of treating oil- and gas-bearing subterranean formations to improve permeability thereof and increase or restore production of oil or gas comprising introducing into said formation through a producing means in fluid communication with said oil- or gas-bearing subterranean formation, a treating fluid comprising:

(A) an aqueous solution of about 5 to about 50 weight percent of an alkyl or aralkyl polyoxyalkylene phosphate ester surfactant having the formulas:



(I)

(II)

wherein R_1 represents an alkyl radical containing from 10 to 18 carbon atoms, R_2 represents an alkyl radical of about 5 to about 27 carbon atoms or a cycloalkyl radical and radicals derived from mineral oils containing alkyl, cycloalkyl and mixed alkyl-cycloalkyl radicals having from about 12 to 27 carbon atoms, R_3 and R_4 represent either hydrogen or alkyl of from about 1 to 22 carbon atoms and the higher alkyls defined by R_1 and cycloalkyls defined by R_2 or radicals derived from mineral oils; A represents the residue of ethylene oxide, ethylene oxide and tetrahydrofuran, or mixed lower alkylene oxides selected from the group consisting of ethylene oxide, propylene oxide, butylene oxide, alone or including tetrahydrofuran, wherein the total molecular weight of said ester is about 500 to about 1500, and wherein A can be heteric or block in molecular configuration; n represents the degree of oxyalkylation; x and y are 1 or 2, the sum of x and y is 3 and z is an integer of 0 to 5; X is hydrogen or a monovalent cation selected from at least one of the group consisting of an alkali metal, and ammonium; and thereafter,

(B) injecting a hydrocarbon into the pore space adjacent to the well bore in amounts sufficient to displace the aqueous solution of said phosphate ester out into the formation,

(C) retaining said aqueous solution of said phosphate ester and said hydrocarbon within said formation for a period of not less than 24 hours and

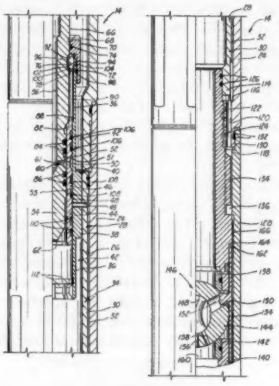
(D) thereafter, pumping and/or displacing said aqueous solution of said phosphate ester and said hydrocarbon from said formation into the well bore by injecting water into said formation by an injection means in fluid communication with said oil-bearing or gas-bearing subterranean formation to produce the desired oil or gas through said producing means.

4,278,130

ACCESS VALVE FOR DRILL STEM TESTING

Robert T. Evans, and Richard L. Giroux, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 17, 1979, Ser. No. 85,597
Int. Cl.³ E21B *33/12, 49/00*
U.S. Cl. 166—332 **19 Claims**



1. An access valve apparatus for communicating a sensing device with a subsurface formation of a well, said apparatus comprising:

a cylindrical valve casing having a cylindrical inner surface and having an upper end connected to a pipe string;

a cylindrical valve body disposed concentrically within said cylindrical inner surface of said valve casing and held in place relative to said valve casing;

first passage means for communicating said subsurface formation of a well with an inner bore of said valve body;

a valve sleeve having a cylindrical outer surface slidably received within said inner bore of said valve body and having a port disposed therethrough connecting said cylindrical outer surface of said valve sleeve with a cylindrical inner surface of said valve sleeve, said valve sleeve being slidable between a closed position wherein said port is isolated from said first passage means and an open position wherein said port is in fluid communication with said first passage means;

a probe nose member having a cylindrical outer surface adapted for sliding insertion within said cylindrical inner surface of said valve sleeve, said probe nose member including a chamber for receiving said sensing device and a second passage means for communicating said chamber with said port of said valve sleeve; and

a bypass means, disposed radially outward from said inner bore of said valve body, for allowing fluid from said

subsurface formation to bypass said valve body, valve sleeve and probe nose member and flow upward through said pipe string to a top of said well;

wherein said valve body, first passage means, valve sleeve, probe nose member and bypass means provide a means for communicating said sensing device with said subsurface formation during both shut in and open flow conditions of said well.

4,278,131

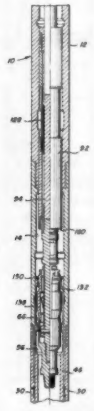
PORT APPARATUS FOR WELL PIPING

William Jani, #2 3401-19 St. NE., Calgary, Canada T2E 6S8

Filed Nov. 13, 1979, Ser. No. 93,535

Int. Cl.³ E21B *43/00*

U.S. Cl. 166—332 **26 Claims**



5. An opening tool for use with a well piping port valve, the port valve having a sleeve valve mounted in longitudinally slideable engagement with the bore of an outer housing, the sleeve valve having at least two longitudinal positions and at least one member by which the sleeve valve is engaged for moving the sleeve valve from one of its longitudinal positions to another, the opening tool comprising:

a mandrel housing positionable in the bore of the outer housing and having means for engaging the bore of the outer housing for locating said mandrel housing in a fixed longitudinal position relative to the port valve and preventing longitudinal movement of said mandrel housing toward the port valve during operation of the opening tool;

a mandrel telescopically mounted in said mandrel housing and adapted for longitudinal travel relative to said mandrel housing between an extended position generally extended from said mandrel housing and a retracted position generally within said mandrel housing;

means mounted on said mandrel for attaching said mandrel to a sleeve valve engagement member when said attaching means is adjacent a sleeve valve engagement member, the distance of said mandrel housing from the sleeve valve being such that said attaching means is adjacent a sleeve valve engagement member when said mandrel is substantially at said extended position; and,

means for detaching said mandrel from the sleeve valve engagement member to which said mandrel is attached when said mandrel is substantially at said retracted position;

the point on the travel of said mandrel at which said attaching means attaches a sleeve valve engagement member and said mandrel and the point on the travel of said mandrel at which said detaching means detaches the engagement member and said mandrel defining a distance equal to the longitudinal distance between the longitudinal positions of the sleeve valve;

whereby, when the sleeve valve is in a first longitudinal position and said mandrel is extended, said attaching means attaches a sleeve valve engagement member and said mandrel acts to move the sleeve valve from its first longitudinal position to a second longitudinal position.

4,278,132

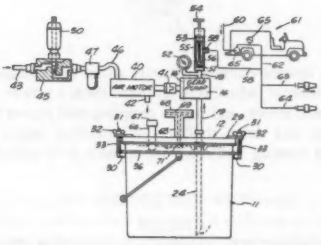
PROPORTIONING APPARATUS

Morgan D. Hostetter, 2442 James Ave., West Covina, Calif. 91791

Filed May 21, 1979, Ser. No. 40,646

Int. Cl.³ A62C *35/00*

U.S. Cl. 169—13 **24 Claims**



14. That improvement in self-powered mobile fire fighting unit of the type having a motor-driven water pump and a power driven source of pressurized air thereon which improvement comprises:

fluid proportioning means for introducing a fire fighting agent from a non-pressurized container into pressurized water being pumped by said water pump at a regulatable pressure substantially higher than the discharge pressure of said water pump, said fluid proportioning means including positive displacement pump means having an inlet connected to said non-pressurized container and an outlet connected to pressurized water flowing through the outlet of said water pump and including manually adjustable back-flow preventer means on the discharge side of said positive displacement pump means operable to open when the pressure of said fire fighting agent has been increased to any of a range of values greater than the water pressure at the outlet of said water pump and air motor means driving said positive displacement pump independently of the operation of said water pump by pressurized air from said source of pressurized air on said mobile fire fighting unit.

4,278,133

ATTACHMENTS FOR LAWN EDGERS

Roland de Marcellus, 151 Riviera Dr., Riviera Beach, Fla. 33404

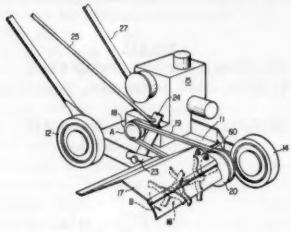
Filed Jul. 3, 1978, Ser. No. 921,719

Int. Cl.³ A01B *33/02, 35/28*

U.S. Cl. 172—14 **11 Claims**

1. A wheeled power tool for home yard work and the like, comprising a chassis, a motor supported by said chassis, two rear wheels spaced transversely of the chassis and mounted on either side of said chassis, a drive shaft supported by said chassis at the front thereof on a substantially horizontal axis oriented transversely of said chassis, a multitined rotor having an elongate support shaft coupled at one end to said drive shaft, a plurality of tines affixed to said elongate shaft and spaced axially therealong and extending substantially radially therefrom, said tines being of substantially equal length and including a generally planar mounting portion secured to said elongate shaft, tine portions on opposite diametric sides of said elongate shaft being offset in opposite axial directions and

having terminal end portions twisted about their axes so as to define cylindrical surfaces of revolution substantially greater than tine thickness when said rotor is rotated on the axis of said elongate shaft, and said cylindrical surfaces of revolution of successive tines being substantially contigious, each of said



tines being spaced circumferentially about the elongate shaft axis on a different radius from all other tines, a power take off means on said motor, and means coupling said power take off means with said drive shaft for transmitting motor power thereto and rotating said rotor about the axis of said elongate shaft.

4,278,134

IMPLEMENT FOR SMOOTHING PARTICULATE MATERIAL SURFACES

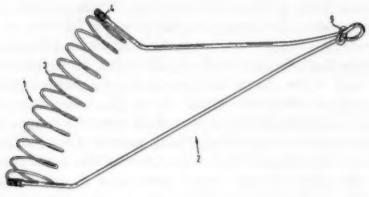
David B. Johnson, 18 Goldsmith Ave., London NW9 7HB, England

Filed Jul. 9, 1979, Ser. No. 55,623

Claims priority, application United Kingdom, Jul. 14, 1978, 29956/78

Int. Cl.³ A01B *1/00*

U.S. Cl. 172—373 **12 Claims**



11. An implement for smoothing the surface of particulate material, such as, for example, sand in sand bunkers of a golf course, comprising:

handle means adapted to be gripped by a user of said implement and comprising a pair of arms, one end of each arm being substantially fixed relative to the corresponding one end of the other arm, while the opposite end of at least one arm is movable relative to the corresponding opposite end of the other arm as well as to said one end of each arm such that said arms are relatively movable between an expanded, operative state at which said arms diverge with respect to each other, and a collapsed, storage state at which said arms are substantially parallel to each other;

a particulate material-engaging head carried by, and extending laterally between, said opposite ends of said handle means arms, said head comprising a helical coil compression spring in which adjacent turns of said coil are spaced along a common axis for engaging said particulate material, and wherein said coil head is axially expansible and compressible between an expanded, operative state corresponding to said expanded, operative state of said handle means arms, and a contracted, storage state corresponding to said collapsed storage state of said handle means arms; and

means disposed upon said handle means for retaining said compression coil spring head and said handle means arms in a compressed and contracted, and collapsed state, respectively.

4,278,135

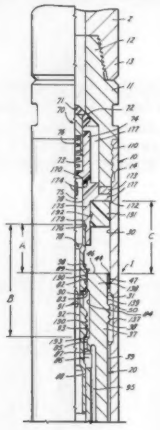
VARIABLE VOLUME PNEUMATIC DRILL

Alfred R. Curington, San Angelo, Tex., assignor to Reedrill, Inc., Houston, Tex.

Filed May 3, 1978, Ser. No. 902,378

Int. Cl.² B25D *9/00*; F01L *1/20*

U.S. Cl. 173—29 **10 Claims**



1. An impact drilling tool for connection in a string of drilling pipe supplied with pneumatic fluid comprising:

an upper sub for connection to said drilling pipe to receive pneumatic fluid therefrom;

a housing with an upper end connected to said upper sub;

an anvil member slidably positioned in the lower end of said housing and having a bit member on its lower end extending outside of said housing;

said anvil member having a passageway extending longitudinally therethrough;

a hammer piston positioned in said housing above said anvil member for reciprocal movement longitudinally of said housing to strike said anvil member repeatedly;

said hammer piston having a first passage way extending longitudinally therethrough;

a feeder tube operatively secured to said sub and extending slidably into the upper end of said hammer piston through its passageway;

an exhaust tube secured in said anvil member passageway and extending slidably into the lower end of said hammer piston passageway;

means including said feeder tube and said hammer piston defining a passageway extending from said upper sub to the upper end of said hammer piston when said hammer piston is in an up position;

means including said feeder tube and said hammer piston defining the passageway extending from said upper sub to the lower end of said hammer piston when said hammer piston is in a down position;

means including said hammer piston and said housing defining a passageway extending from the lower end of said piston to said exhaust tube when said hammer piston is in an up position,

means including said hammer piston and said housing defining a passageway extending from the upper end of said

piston to said exhaust tube when said hammer piston is in a down position,

means determining the volume of pneumatic fluid required to operate said hammer piston at any predetermined pressure and comprising an annular plug member removably positioned within said housing and spaced from said hammer piston when in the up position, and

a tubular supporting member secured in the upper end of said housing closing the end space above said hammer piston ;

said feeder tube being supported in said tubular supporting member and said annular plug member being positioned on said tubular supporting member.

4,278,136

SINKERDRILL

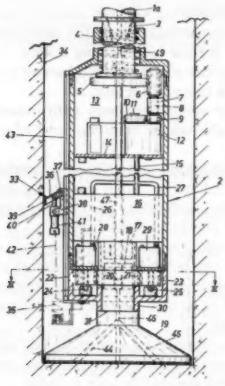
Göte I. Hansson, Strandvägen 31, S-453 00 Lysekil, Sweden

Filed Mar. 26, 1980, Ser. No. 134,062

Claims priority, application Sweden, Mar. 20, 1979, 7902850

Int. Cl.³ E21B 4/16

U.S. Cl. 175—93 **4 Claims**



1. An improved rock drill including a percussion drill bit provided at the lower end of a drill rod, and a drive motor positioned above ground and arranged to rotate said drill rod, the improvement comprising

a machine casing positioned between said drill rod and said drill bit and enclosing a hydraulic pump rotatably driven by said drill rod, and a percussion element including a hammer, said hammer arranged to deliver blows at regular intervals against said drill bit, said hydraulic pump driving said percussion element and supplying pressurized liquid thereto, and at least one hydraulic motor housed inside said machine casing and driven by the hydraulic liquid, said hydraulic motor arranged to rotatably drive said drill bit, and hydraulically controllable blocking means provided on said machine casing to prevent said casing from rotating but allow it to sink relative to the wall of the drill hole while said drill bit is in operation, said blocking means controlled by pressurized liquid from said hydraulic pump.

4,278,137

APPARATUS FOR EXTRACTING MINERALS THROUGH A BOREHOLE

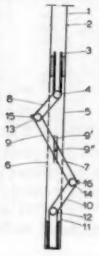
Wouter Van Eek, deceased, late of Wassenaar, Netherlands, by Meryl A. M. Van Eek nee Beckett, legal representative, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Jun. 18, 1979, Ser. No. 49,407

Claims priority, application Netherlands, Jun. 19, 1978, 7806559

Int. Cl.³ E21B 9/26

U.S. Cl. 175—267 **12 Claims**



1. Apparatus for extracting minerals through a bore hole comprising a sleeve which is provided with one or more longitudinal slots and a chain of pivotally connected sections, one of the outer ends of said chain being pivotally connected to said sleeve, the other outer end of said chain being pivotally connected to an element that can move along the axis of said sleeve, said chain of sections being fastened in each pivot joint between two sections to means capable of loosening the mineral outside the wall of the bore hole and said chain of sections also being fastened in the middle of each section except the first and last section to means which allow a rotation in the plane of the longitudinal slots and an axial movement of the sections along two opposite longitudinal grooves in the sleeve wherein said chain of sections, when in straight position, is within the sleeve and, when in folded state, projects outwardly through the longitudinal slots in the sleeve, said sleeve being connected to a pipe string by means capable of reciprocating the sleeve in the direction of its longitudinal axis, relative to the pipe string, while the pipe string rests in a stationary position.

4,278,138

COMPOSITE HEAVY METAL DRILL COLLAR

David S. Rowley; James T. Aumann, and Lothar H. Waldes, all of Salt Lake City, Utah, assignors to Christensen, Inc., Salt Lake City, Utah

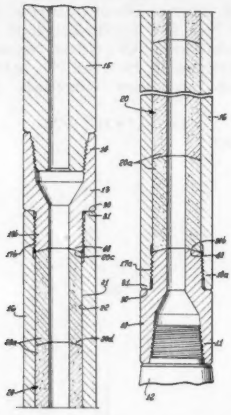
Filed Jan. 21, 1980, Ser. No. 113,497

Int. Cl.³ E21B 17/16; F16L 9/14

U.S. Cl. 175—320 **9 Claims**

1. A composite drill collar adapted to form part of a drill pipe string used in drilling a bore hole in earth formations, comprising an elongate outer pipe member, upper connector means adapted to secure the upper end of said outer pipe member to an adjacent drill pipe member thereabove, lower connector means adapted to secure the lower end of said pipe member to a drill bit therebelow, a rigid elongate annular member in said outer pipe member having a specific gravity at least twice the specific gravity of said outer pipe member, said annular member being in a solid state when placed in said outer pipe member, means for preloading said annular member in axial compression within said outer pipe member before the composite drill collar is lowered in the bore hole, said outer pipe member having sufficient wall thickness whereby substan-

tially all bending, torsion, compression, tension and impact loads are transmitted from the adjacent drill pipe member



thereabove through said outer pipe member to the drill bit without being imposed on said annular member.

4,278,139

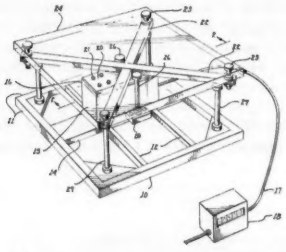
WEIGHING APPARATUS WITH OVERLOAD PROTECTION FOR OFF-CENTER LOADING

Richard F. Caris, Scottsdale, Ariz., assignor to Interface, Inc., Scottsdale, Ariz.

Continuation of Ser. No. 903,561, May 8, 1978. This application Aug. 3, 1979, Ser. No. 63,437

Int. Cl.[3] G01G *23/02, 21/10*

U.S. Cl. 177—154 **14 Claims**



1. A weighing instrument of the type utilizing a load cell which comprises:

(a) a frame for engaging a supporting surface;

(b) load cell means having a mounting surface and a load receiving surface, the mounting surface engaging said frame, said load cell means providing an output signal in response to forces applied between the surfaces;

(c) a weighing platform having first and second opposing surfaces, said first surface receiving an article to be weighed;

(d) means for coupling the weighing platform to the load receiving surface of the load cell means;

(e) first overload protective means connected to said frame proximate to the load cell means and extending toward said weighing platform, said first overload protective means being spaced from the second surface of said weighing platform by a first distance; and

(f) second overload protective means mounted on said frame and spaced from said load cell means, said second means being spaced from said weighing platform by a second distance, said second distance being greater than said first distance whereby overload protection of said load cell means is provided which is substantially independent of the location of the article on the weighing platform.

4,278,140

UNDERCARRIAGE FOR ADVERSE TERRAIN VEHICLE

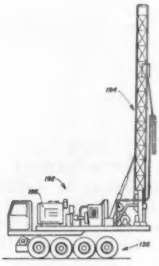
Norman D. Oswald, Duncanville, and Harry S. Mankey, Dallas, both of Tex., assignors to Standard Manufacturing Company, Incorporated, Dallas, Tex.

Division of Ser. No. 835,726, Sep. 22, 1977, abandoned. This application Apr. 6, 1979, Ser. No. 27,754

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.[3] B62D *11/02*

U.S. Cl. 180—6.48 **16 Claims**



1. A mobile drilling rig vehicle, comprising:

(a) pair of undercarriage assemblies each including:

an elongate hollow load bearing frame,

at least three axle members each having a wheel receiving member at one end thereof,

at least three wheel members each mounted on and secured to the wheel receiving end of one of the axle members,

means rotatably supporting the axle members at longitudinally spaced points along the frame with each of the axle members extending out of and rotatably supported in at least one side of the frame,

the middle wheel member extending below a plane lying tangent to the bottoms of the endmost wheel members,

a plurality of sprocket means each positioned within the frame and each mounted on and secured to one of the axle members,

drive means comprising motor means and transmission means mounted on the frame between one endmost axle member and the middle axle member,

first drive sprocket means having two sets of teeth thereon positioned with the frame and mounted for rotation by the drive means,

second drive sprocket means mounted on the middle axle member,

first drive chain means constrained around the first drive sprocket means on one set of teeth and the sprocket means on the endmost axle member adjacent the drive means,

second drive chain means constrained around the first drive sprocket means on the other set of teeth and the sprocket means on the middle axle member, and

third drive chain means constrained around the second drive sprocket means and the sprocket means on the other endmost axle member,

the first and second drive chain means drivingly connecting the endmost axle member adjacent the drive means and the middle axle member to the output of the drive means for rotation under the action thereof:

(b) a drilling machine frame;

(c) means supporting the drilling machine frame on the

elongate hollow load bearing frames of the undercarriage assemblies for pivotal movement with respect thereto around a normally vertically oriented axis;

(d) a boom;

(e) means supporting the boom on the drilling machine frame for pivotal movement between a traveling orientation wherein the boom extends substantially horizontally and in operating orientation wherein the boom extends substantially vertically;

(f) means mounted on the boom for effecting rotation of a drilling tool; and

(g) means for moving the drilling tool rotating means axially with respect to the boom from a position adjacent one end thereof to a position adjacent the other end.

4,278,141

UNDERCARRIAGE FOR ADVERSE TERRAIN VEHICLE

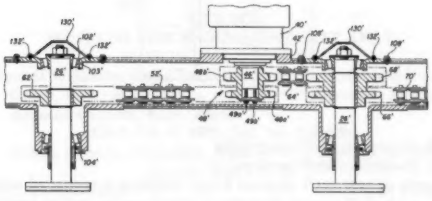
Norman D. Oswald, Duncanville, and Harry S. Mankey, Dallas, both of Tex., assignors to Standard Manufacturing Company, Incorporated, Dallas, Tex.

Continuation of Ser. No. 835,726, Sep. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 799,328, May 23, 1977, abandoned. This application Jul. 2, 1979, Ser. No. 53,906

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.³ B62D *11/02*

U.S. Cl. 180—6.48 **20 Claims**



1. An undercarriage assembly for supporting and propelling a mechanism, comprising:

an elongate hollow load bearing frame adapted for connection to the mechanism;

at least three axle members each having a wheel receiving member at one end thereof;

at least three wheel members each mounted on and secured to the wheel receiving end of one of the axle members;

means rotatably supporting the axle members at longitudinally spaced points along the frame with each of the axle members extending out of the frame and being rotatably supported in at least one side of the frame;

the middle wheel member extending below a plane lying tangent to the bottoms of the endmost wheel members to facilitate skid steering;

a plurality of sprocket means each positioned within the frame and each mounted on one of the axle members;

drive means comprising motor means and transmission means mounted on the frame between one endmost axle member and the middle axle member;

first drive sprocket means having two sets of teeth thereon positioned within the frame and mounted for rotation by the drive means;

second drive sprocket means positioned within the frame and mounted on the middle axle member;

first drive chain means constrained around the first drive sprocket means on one set of teeth and the sprocket means on the endmost axle member adjacent the drive means;

second drive chain means constrained around the first drive sprocket means on the other set of teeth and the sprocket means on the middle axle member; and

third drive chain means constrained around the second drive sprocket means and the sprocket means on the other endmost axle member;

said first and second drive chain means drivingly connecting both the endmost axle member adjacent the drive means and the middle axle member directly to the output of the drive means for concurrent rotation under the action thereof.

4,278,142

AUTOMATIC GUIDANCE SYSTEM FOR VEHICLES

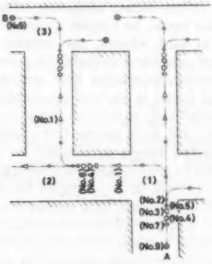
Hidehiko Kono, Musashi-Murayama, Japan, assignor to Agency of Industrial Science and Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Mar. 13, 1979, Ser. No. 20,042

Claims priority, application Japan, May 8, 1978, 53-54194; Sep. 29, 1978, 53-120083

Int. Cl.³ B62D *1/24*

U.S. Cl. 180—168 **7 Claims**



1. An automatic guidance system for a vehicle provided with an automatic steering unit, comprising:

marks of various shape patterns respectively characteristic of specific travel-function information attached to the surface of a route selected for the travel of the vehicle;

an ITV camera mounted on the vehicle and adapted to photograph successively said marks;

means for recognizing the shapes, postural angles and positional deviations of the marks photographed by the ITV camera, comprising,

means for measuring the largest height Ay in the direction of the Y axis of the pattern of the mark photographed by the ITV camera and projected on the X axis in a cartesian coordinate system,

means for measuring the width Ap from the point of intersection between the X axis and a perpendicular line drawn from the point of the largest height of the projected pattern to the X axis to the point on the X axis at which the projected pattern has the smallest value,

means for measuring the largest width Ax of the projected pattern in the direction of the X axis, and

means for measuring the ratio between the width Ap and the largest width Ax; and

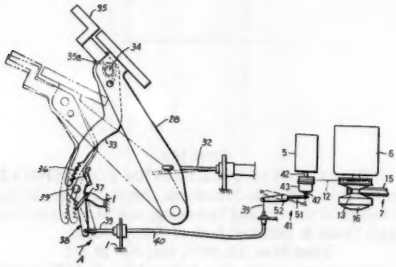
means for conveying a signal corresponding to the ratio obtained to the automatic steering unit for thereby adjusting the postural angle of the vehicle so as to have the vehicle steered accurately along said route.

4,278,143

PARKING BRAKE RELEASE APPARATUS

Hiroshi Nagai, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 955,305, Oct. 27, 1978, abandoned. This application Jan. 9, 1980, Ser. No. 110,673
Claims priority, application Japan, Nov. 4, 1977, 52-132224
Int. Cl.[3] B60R *27/00*
U.S. Cl. 180—282 **8 Claims**



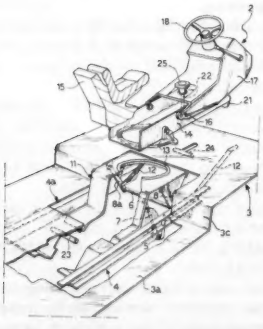
1. Brake release apparatus for a vehicle having a frame, wheels, a parking brake for at least one of said wheels, a parking brake pedal pivotally mounted to said frame to apply said parking brake, said pedal having a braking and a brake released condition, brake return means opposing braking movement of said parking brake pedal, an engine to provide driving power to at least one of said wheels, said engine when operating having a range of possible rotational frequencies, said release apparatus comprising: releasable lock means adapted to lock the parking brake pedal in its braking condition; lock release means adapted selectively to release said lock means and selectively to prevent said lock means from locking; and engine frequency responsive means connected to said lock release means and adapted to require said lock release means to permit said lock means to lock at frequencies below a pre-selected frequency, and to release said lock means if locked at frequencies at and above said pre-selected frequency, and to prevent said lock means from locking if unlocked at frequencies at and above said pre-selected frequency, all in direct and unique response to the frequency of said engine.

4,278,144

REVERSIBLE DRIVING STATION FOR TRACTOR VEHICLE

Philippe Perin, Meudon, France, assignor to Fiat Trattori S.p.A., Modena, Italy

Filed Oct. 12, 1979, Ser. No. 84,344
Int. Cl.[3] B60K *26/00;* **B60N** *1/02, 1/08*
U.S. Cl. 180—329 **3 Claims**



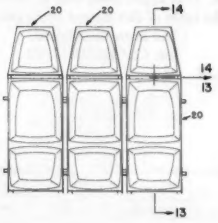
1. In a tractor of the type having a reversible driving station on the frame of the tractor, the improvement comprising an intermediate support member for said driving station, linkage means pivotally mounting said intermediate support member on said frame for movement between a higher level and a lower level, a driving station base member rotatably mounted on said intermediate support member, seat means secured to said base member and control console means pivotally mounted on said base member in front of said seat means for movement between a first position wherein said console means is spaced from said seat means in operative position and a second position adjacent said seat means to facilitate rotation of said driving station within a narrow cab on said tractor.

4,278,145

CONCERT SHELL

Robert A. Eade, 9 Fresh Meadow Rd., Easton, Conn. 06612, and Peter V. C. Quaintance, 1650 Jones, San Francisco, Calif. 94109

Filed Jun. 29, 1979, Ser. No. 53,517
Int. Cl.[3] E04B *1/99*
U.S. Cl. 181—30 **7 Claims**



1. A concert shell comprising
a plurality of shell sections,
each of said shell sections being similarly constructed and each shell section including a lower portion and an upper portion, means for readily detachably connecting the upper portion from said lower portion,
a frame having opposed side and end members defining each of said portions,
said opposed side and end members having a circumscribing lip to define a groove circumscribing said frame,
an accoustical panel mounted on said frame whereby the edges of said panel are received in said groove,
means for fixedly connecting said panel to said frame,
and said panel connected to said upper portion having at least one outwardly projecting blister having a curvilinear contour extending longitudinally and transversely of said blister; and said panel connected to said lower portion having a plurality of spaced apart outwardly projecting blisters,
each of said blister having a compound curvilinear contour along the respective x and y axis thereof, and said spaced blisters of said lower section being spaced apart to define a separation therebetween located at the height of a seated musician.

4,278,146

SOUND BARRIER

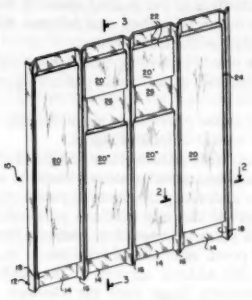
Armand Lerner, 100 E. Hartsdale Ave., Hartsdale, N.Y. 10530, and Sylvain S. Lerner, 301 E. 79th St., New York, N.Y. 10021

Filed Sep. 28, 1979, Ser. No. 79,784
Int. Cl.[3] G10K *11/04;* **E04B** *1/84, 1/99*
U.S. Cl. 181—210 **13 Claims**

1. A sound barrier for isolating a noise source comprising,
(a) a transparent panel made of sound attenuating material,
(b) said panel comprising a plurality of longitudinally extending side by side co-planar flat sections separated by

V-shaped ribs so as to define a plurality of longitudinally extending side by side cavities, said flat sections comprising the major part of said panel,

(c) at least some of said cavities being provided with acoustical absorptive material therein in engagement with the entire transverse extent of the flat sections thereof,



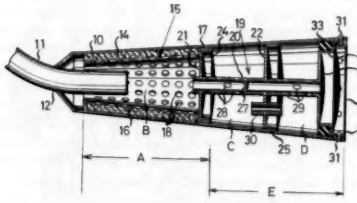
(d) said barrier being disposed so that the open faces of said cavities confront said noise source, and with the plane defined by said co-planar flat sections extending vertically.

4,278,147

MUFFLER FOR ENGINE, PARTICULARLY MOTORCYCLE ENGINE

Junichi Watanabe, Kobe; Takahiko Aoyama, Akashi, and Norio Gotoh, Gifu, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Feb. 6, 1980, Ser. No. 118,880
Claims priority, application Japan, Feb. 8, 1980, 55-15720[U]
Int. Cl.³ F01N *1/24*
U.S. Cl. 181—256 **14 Claims**



1. A muffler for an engine, particularly a motorcycle engine comprising:

(a) a hollow muffler body tapering at least in one portion thereof;

(b) a tapering hollow sound-absorbing member inserted in said muffler body through a major diameter end thereof and fitted in said tapering portion thereof;

(c) a keep body inserted in said muffler body through said major diameter end thereof and fitted in said sound-absorbing member to secure the sound-absorbing member in place, said keep member being of a construction allowing exhaust gases to permeate therethrough to the sound-absorbing member; and

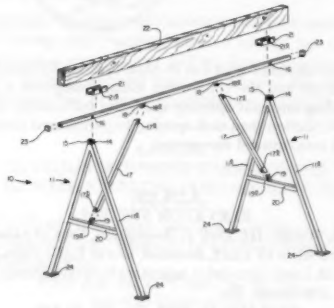
(d) a muffler core inserted in said muffler body through said major diameter end thereof after said sound-absorbing member and said keep member have been inserted therein, said muffler core comprising at least two baffle plates conforming to the inner surface of said muffler body and constructed such that said sound-absorbing member can be forced against the inner surface of the muffler body if the muffler core is pressed axially of the muffler body when the former is inserted in the latter, said at least two baffle plates defining at least two chambers within said muffler body maintained in fluid communication with one another.

4,278,148

SAWHORSE

Philip A. Daley, Rte. 1, Box 33Y, Ragley, La. 70657; Allan R. Mouhot, Rte. 7, Box 732, and Dan C. Felice, Rte. 1, Box 707, Lot 105, both of Lake Charles, La. 70601

Filed Nov. 13, 1979, Ser. No. 93,452
Int. Cl.³ F16M *11/00*
U.S. Cl. 182—181 **1 Claim**



1. A sawhorse comprising a wooden stringer, a metal stringer connectable to said wooden stringer, two A-frames including a pair of outwardly sloping legs and a transverse strut rigidly fixed between said legs, and braces between said frames and stringer, said A-frames having connected at the top thereof a vertical U-shaped first bracket having holes in the sides thereof, said first bracket being adapted to receive said metal stringer, said metal stringer having two holes therein alignable with said holes in said first bracket connected to said A-frame for receipt of a pin or bolt, and said metal stringer and said strut having guide means rigidly connected thereto for receipt of said braces, said guide means on said strut and said metal stringer having holes therein and said braces having holes therein, said holes in said braces and guides being aligned for receipt of a pin or bolt, said metal stringer having a U-shaped bracket means connected thereto, said second bracket means being adapted to receive said wooden stringer, said second bracket means having holes therein for insertion of a pin or bolt, said metal stringer having cap means connected thereto and said legs of said A-frames having foot means connected thereto, two braces connecting each of said A-frames to said metal stringer, each of said braces being connected to one of said struts on one of said A-frames and to said metal stringer.

4,278,149

TRANSLATIONALLY MOVABLE IDLER GEAR AS CLUTCH FOR SPRING DRIVEN MOTOR

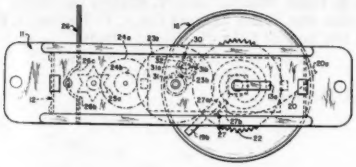
Max Gittler, Northport, N.Y., assignor to Aladdin Toy Motors, Inc., Brooklyn, N.Y.

Filed May 4, 1979, Ser. No. 36,270
Int. Cl.³ F03G *1/00*
U.S. Cl. 185—39 **4 Claims**

1. A clutch mechanism adapted for use in a spring driven motor including a spring, a drive gear operated by the spring, a power output and a gear train situated between the drive gear and the power output for changing rotational rate of the drive gear, the clutch mechanism comprising

an idler gear interposed between two adjacent gears selected from the drive gear, the gear train and an output gear of the power output, and stationary supporting means for

supporting said idler gear and permitting the idler gear to rotate and to move translationally relative to the supporting means such that the idler gear can move translationally between a position in which the idler gear is in simultaneous driven engagement with said two adjacent gears and a position in which the idler gear is out of said simultaneous driven engagement,



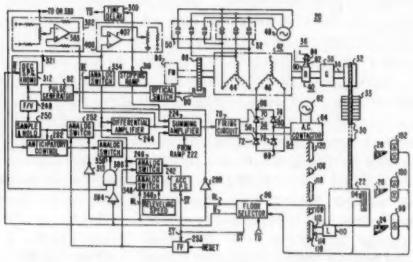
wherein the idler gear has an axial opening extending therethrough and the supporting means comprises a post extending into said opening and being sufficiently smaller in cross section than said opening to permit said rotation and said translational movement.

4,278,150

ELEVATOR SYSTEM

Henry A. Wehrli, III; Dirk J. Boomgaard, both of Monroeville, Pa., and Alvin O. Lund, deceased, late of Little Falls, N.J. (by Helen B. Lund, executrix), assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 22, 1979, Ser. No. 41,449
Int. Cl.[3] B66B *1/30*
U.S. Cl. 187—29 R **35 Claims**



1. An elevator drive system for selectively providing motoring and system braking torques which control the starting, driving, and stopping of an elevator car during a run, comprising:

an elevator car,

alternating current motor means disposed to effect movement of said elevator car,

said alternating current motor means including electrically isolated high and low speed components,

first control means for applying a non-adjustable alternating current line voltage to said high speed component, to develop a motoring torque,

second control means for applying a controllable direct current voltage to said low speed component, with said controllable direct current voltage being capable of developing a braking torque in the low speed component which provides a system braking torque sufficient to stop said elevator car when moving, and to prevent said elevator car from moving when stationary, notwithstanding the simultaneous application of the alternating current line voltage to said high speed component,

and third control means for controlling said first and second control means such that the high and low speed components simultaneously develop motoring and braking torques during at least a selected portion of a run, with the system braking torque exceeding the motoring torque at least once during said selected portion of a run.

30. An elevator system, comprising:

an elevator car,

drive means for said elevator car,

pattern generator means providing a deceleration pattern signal indicative of the desired speed of the elevator car,

tachometer means providing a tach signal responsive to the actual speed of the elevator car,

comparator means providing a difference signal responsive to the difference between said pattern signal and said tach signal,

and control means providing a signal for said drive means in response to said difference signal,

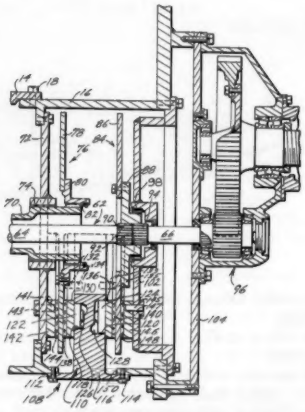
said pattern generator means including a read-only memory having a speed pattern stored therein, and addressing means for addressing the read-only memory in response to movement of the elevator car when the elevator car reaches a predetermined first distance from the desired stopping point, with the car movement increment which changes the address applied to the read-only memory being relatively large until the elevator car reaches a predetermined second distance from the desired stopping point, at which point the car movement increment which changes the address applied to the read-only memory is substantially reduced.

4,278,151

BRAKE ASSEMBLY FOR A VEHICLE

Orville E. Kessinger, Jr., Blue Grass, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 815,113, Jul. 13, 1977, abandoned. This application Dec. 17, 1979, Ser. No. 104,234
Int. Cl.[3] F16D *55/00*
U.S. Cl. 188—71.3 **2 Claims**



1. A brake assembly for independently braking a pair of spaced members (**78,86**) rotatably mounted within a vehicle casing portion (**16**) on an axis, the casing portion (**16**) having an access opening (**150**), the brake assembly comprising:

a main body (**110**) having a plate (**112**) and a C-shaped body portion (**116**) having first and second pluralities of bores (**118,120**) opening on the opposite sides thereof, the plate (**112**) being releasably connected to the casing portion (**16**) and the body portion (**116**) extending inwardly through the access opening (**150**);

first and second pluralities of pistons (**122,124**) individually disposed respectively in the first and second pluralities of bores (**118,120**);

a first movable member (130) having a C-shape connected to the body portion (116) on one side thereof; and

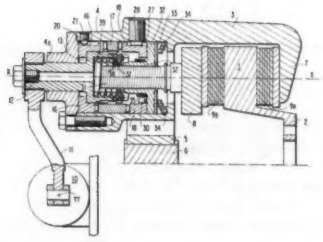
a second movable member (136) having a C-shape connected to the body portion (116) on another side thereof, the first and second movable members (130,136) being independently engagable against a respective one of the spaced members (78,86) by axial movement of the respective first and second pluralities of pistons (122,124), and the main body (110) and the first and second movable members (130,136) being of a construction sufficient for release and removal from the casing portion (16) in a direction radially away from the axis between the spaced members (78,86) and independently of the spaced members (78,86).

4,278,152

CONTROL MECHANISM FOR DISC BRAKES

Pierre G. Tosi, Pont-a-Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Aug. 21, 1979, Ser. No. 68,361
Claims priority, application France, Aug. 24, 1978, 78 24755
Int. Cl.³ F16D *65/56*
U.S. Cl. 188—71.9 **14 Claims**



1. A disc brake control mechanism for a brake disc, said mechanism comprising a floating caliper, said caliper comprising a stationary shoe, including a friction pad facing one face of the disc, a mobile shoe carrying a friction pad facing the other disc face, an articulated drive lever, driving means including opposed helicoidal inclined faces operatively coupled to said articulated drive lever for moving at least said mobile shoe friction pad relative to the disc to effect braking, helicoidal needle thrust bearings interposed between said helicoidal inclined faces, and an automatic wear compensation system for said driving means, the improvement wherein said driving means comprises three drum cams defining four paired helicoidal inclined faces, one of said cams being operatively coupled to one of said friction pads by said automatic wear compensation system such that the four paired helicoidal inclined faces function to amplify the axial travel of said brake pads without an increase in pitch of the helicoidal surfaces or the angle of rotation of said lever while permitting the mechanism to be arbitrarily employed as an operating mechanism for a left or right brake of a vehicle.

4,278,153

BRAKE FRICTION MATERIAL WITH REINFORCEMENT MATERIAL

Doulatabad A. Venkatu, Stow, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Nov. 24, 1978, Ser. No. 963,621
Int. Cl.³ F16D *69/02*
U.S. Cl. 188—251 M **24 Claims**

1. A brake disk, comprising:

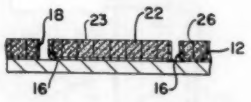
(a) an annular disk;

(b) a multiplicity of cups secured to said disk; and

(c) a multiplicity of frictional modules, one said frictional module residing in each said cup;

each said module comprising a grid of substantially copper-containing reinforcement material and a quantity of copper-containing sintered frictional material reinforced through said entire quantity by said grid, said grid and frictional material being separate and distinct elements of the module;

said substantially copper-containing grid being compatible with said copper-containing sintered frictional material in coefficient of friction properties;



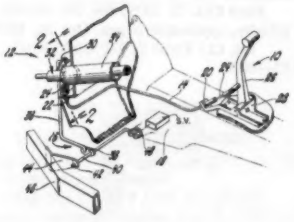
said quantity of copper-containing sintered frictional material having outer surfaces sintered to said cup and both said friction material and said reinforcement grid having upper surfaces exposed from said annular disk cups, said grid being free of direct attachment to said cups.

4,278,154

VEHICLE FLOOR MOUNTED TRANSMISSION SHIFT LEVER WITH STEERING COLUMN BACKDRIVE LINKAGE

William D. Cymbal, Freeland, and Dan R. Kimberlin, Frankenmuth, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 18, 1979, Ser. No. 48,892
Int. Cl.³ F16D *67/00*
U.S. Cl. 192—4 A **2 Claims**



1. An improvement in floor mounted transmission control mechanisms for a vehicle having a steering column backdrive and a locking mechanism, and a transmission shift control, wherein the improvement comprises; a drive transmitting means connected between the floor mounted transmission control mechanism and the steering column backdrive, and another drive transmitting means connected between the steering column backdrive and the transmission shift control, whereby manual input motion must result in motion of the steering column backdrive before the motion is transmitted to the transmission shift control.

4,278,155

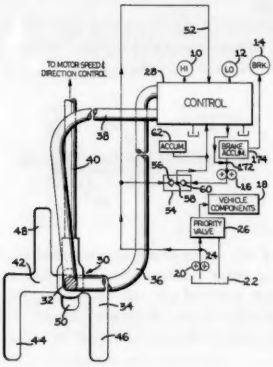
DRAW WORKS TRANSMISSION CONTROL

Kenneth F. Golan, Pekin, and James E. Winzeler, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00293, §371 Date May 2, 1979, §102(e) Date May 2, 1979, PCT Pub No. WO80/02446, PCT Pub. Date Nov. 13, 1980
This PCT application filed May 2, 1979, Ser. No. 89,113
Int. Cl.³ B60K *41/24;* **F15B** *1/02*
U.S. Cl. 192—4 R **9 Claims**

1. In combination with a control (28) for a hydraulically operated draw works or the like having a hydraulically disengaged brake (14) a transmission (10, 12), a brake control valve (114, 122) including an inlet (156) and an outlet (152), the outlet (152) connected to said brake, and a source of fluid (20) under

pressure connected to said inlet (156), the improvement comprising:



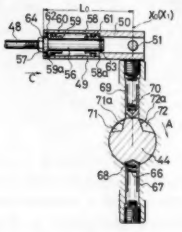
means (172) for providing modulated application of said brake (14) after said brake (14) has been fully released, and to provide unmodulated brake application of said brake (14) after said brake (14) has been partially released.

4,278,156

CLUTCH ENGAGING AND DISENGAGING MEANS

Kazuhiko Yano, Toyonaka, and Kazuhiko Ohtsuki, Takarazuka, both of Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan

Filed Oct. 15, 1979, Ser. No. 85,105
Claims priority, application Japan, Oct. 31, 1978, 53-134074
Int. Cl.[3] F16D *21/04*; G05G *9/08*
U.S. Cl. 192—48.91 **7 Claims**



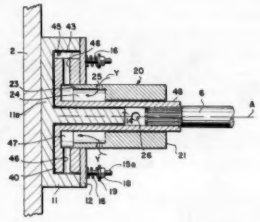
1. In a mechanically operated double clutch mechanism of the type in which a movable clutch member is displaced axially from a neutral position into a first or second direction selectively from effecting a first or second engagement of the clutch resulting in an operative connection of one power transmitting member to another first or second power transmitting member and in which once the clutch has been engaged said movable clutch member is forced to displace into a direction of engaging the clutch by the torque transmitted by such clutch, a clutch engaging and disengaging means comprising a control lever which is rotated by push-pull control means to displace said movable clutch member and which is retained in its neutral position by a spring-biased detent means, characterized in that said control lever is operatively connected to said push-pull control means by a coupling including a first coupling member fixedly connected to said push-pull control means, and a second coupling member pivotally connected to said control lever, the first and second coupling members being fitted telescopically and being movable relative to each other within a limited range, said coupling further comprising spring means disposed between the first and second coupling members so that spring force of such spring means is enlarged when the first coupling member is moved relative to the second coupling member by the push-pull control means, the arrangement being such that initial movement of the push-pull control means in either direction moves the first coupling member until the first coupling member becomes engaged mechanically with the second coupling member to enlarge the spring force of the spring means, and further movement of the push-pull control means in that direction moves the first and second coupling members together to rotate said control lever until the lever has been freed, respectively, from detenting force by the detent means when the clutch is operated to engage the same and from the force of engagement of the clutch when the clutch is operated to disengage the same, some additional rotation being further provided to said control lever by the enlarged spring force of said spring means.

4,278,157

FLUID CLUTCH

Palmer F. King, P.O. Box 867, Lewiston, Me. 04240

Filed Feb. 16, 1979, Ser. No. 12,889
Int. Cl.[3] F16D *31/00*
U.S. Cl. 192—58 R **7 Claims**



1. A fluid clutch comprising a cylindrical clutch housing including a cover and connectable to an engine flywheel for rotation therewith about a given axis coincident with the axis of rotation of the flywheel and disposed eccentric to the central axis thereof, fluid impelling means comprising a substantially cylindrical impeller head, cylindrical means centrally disposed concentrically about the central axis of the impeller head for connecting the impeller to a transmission shaft, to be driven by the engine, for rotation therewith, means mounting the impeller head for rotation enclosed in the clutch housing about the central axis thereof and coincident with said given axis to define a periodically varying annular clearance between the inner cylindrical surface of the clutch housing and the outer surface of the impeller head during relative rotation of the two, pumping vanes extending radially outwardly from the impeller head and contacting the inner cylindrical surface of the clutch housing, an annular chamber disposed concentrically around the cylindrical means of said impeller head and opening at the shaft side of the housing and radially extending fluid passages in the impeller head providing fluid communication between the annular clearance and the annular chamber, clutch engaging means extendable into said enclosed clutch housing comprising a cylindrical valve sleeve slidably mounted on the cylindrical means and having an outside diameter at the one end portion thereof nearer the clutch housing configured to be closely received within the annular chamber at the outer surface thereof, the one end portion being movable in the annular chamber between a first position wherein the radial fluid passages are blocked off and a second position wherein the radial fluid passages are unobstructed whereby fluid may circulate within the clutch housing between said annular chamber and said annular clearance and means defining a fluid passage between the valve sleeve and the cylindrical means for providing fluid communication from the annular chamber to without the clutch housing to enable displacement of fluid during movement of the one end portion of the valve

sleeve, and fluid reservoir means for retaining a supply of fluid for the clutch during the operation thereof.

4,278,158

FLUID-FRICTION CLUTCH

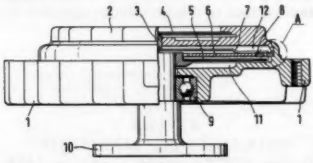
Hans Martin, Stuttgart, Fed. Rep. of Germany, assignor to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Apr. 5, 1979, Ser. No. 27,327

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1978, 2814608

Int. Cl.³ F16D *35/00*

U.S. Cl. 192—58 B **9 Claims**



1. A temperature-controlled, fluid-friction clutch filled with viscous fluid, comprising:

a drive disk mounted for rotation about an axis, said disk being flexible in the direction of said axis;

first and second clutch-driven plates mounted for rotation about said axis, said plates having respective co-planar drive surfaces facing and spaced apart from respective surfaces of said drive disk, the space between said clutch-driven plates defining a fluid working space;

means defining a fluid storage space adjacent said first clutch-driven plate;

means extending from one said clutch-driven plate into said working space for pumping said viscous fluid from said working space into said storage space; and

temperature-controlled valve means operatively connected for controlling flow of said viscous fluid between said working space and said storage space.

4,278,159

TEMPERATURE CONTROLLED VISCOUS FAN DRIVE

Helmut Roth, Bloomfield Hills, and Terry J. Farrell, Troy, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 1, 1979, Ser. No. 90,363

Int. Cl.³ F16D *35/00, 43/25*

U.S. Cl. 192—58 B **2 Claims**

1. A variable speed viscous drive mechanism comprising:

A. An input drive shaft;

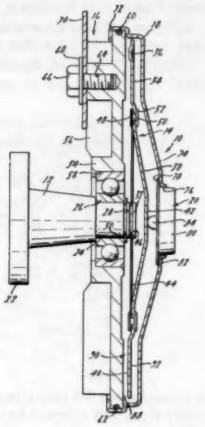
B. impeller means drivingly engaged by said drive shaft and including a generally disc-shaped member having a central generally conical concave projection extending away from an output member;

C. said output member rotatively supported on said drive shaft in axially spaced relationship with said impeller means for relative rotation with respect to said impeller means;

D. a housing member carried for rotation with said output member and surrounding said impeller means;

E. a predetermined quantity of working fluid carried within said housing member through which said output member is driven by said impeller means; and

F. mounting means for said impeller means operative to permit movement of said impeller means axially between a first position remote from said output member and a second position proximate said output member to effect variations in the difference of rotational speeds between said impeller means and said output member, said mounting means comprising a readily flexible disc-like member fixedly secured to said disc-shaped member adjacent the outer periphery of said projection and drivingly engaged with said drive shaft.



4,278,160

VISCOUS FLUID COUPLING

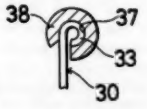
Masaharu Hayashi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 20, 1979, Ser. No. 77,280

Claims priority, application Japan, Sep. 21, 1978, 53-116322

Int. Cl.³ F16D *35/00, 43/25*

U.S. Cl. 192—82 T **1 Claim**



1. A viscous fluid coupling comprising:

a rotatable casing provided with a fluid operating chamber and a fluid reservoir chamber therein, said chambers being in fluid communication one with the other;

a rotor located in said fluid operating chamber, the rotor being rotatable relative to said casing,

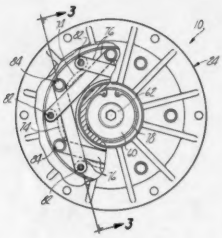
valve means operable to control fluid communication between said fluid operating chamber and said fluid reservoir chamber, and

a bimetal coil located on the exterior of said casing, the inner end of said bimetal coil being operatively connected to said valve means and the outer end of the bimetal coil being pivotally connected to said casing, said bimetal coil including an outer extreme end bent in a circular shape for pivotal connection between said bimetal coil and said casing, the outer extreme end of said bimetal coil being fixedly press-fitted in an opening formed in said casing.

4,278,161
COUPLING ARRANGEMENT FOR AN ELECTROMAGNETIC CLUTCH

Michael L. Mower, Elmira, and William A. Carleton, Pine City, both of N.Y., assignors to Facet Enterprises, Inc., Tulsa, Okla.

Filed Sep. 25, 1978, Ser. No. 945,274
Int. Cl.[3] F16D 27/10, 3/60
U.S. Cl. 192—84 C 6 Claims



1. A coupling arrangement for providing for a first rotatable hub member axially fixed and adapted to be coupled to a second rotary member, said second rotary member mounted for limited relative axial movement relative to said first rotatable member, the coupling arrangement comprising:

a plurality of elongated leaf spring elements extending in a generally circumferential direction about the axis of rotation of said members, each of said leaf spring elements having one end affixed to said rotary member and an opposite end affixed to said rotatable axially fixed member, whereby said leaf spring elements transmit torque therebetween;

said leaf spring elements extending in a crossing pattern with respect to each other, in which each of said leaf spring elements crosses over adjacent leaf spring elements, said crossing pattern comprising the extension of each of said leaf spring elements over the portions adjacent each of the connected ends of the next adjacent two leaf spring elements in said series, each of said leaf spring elements having said one and other ends connected alternately to said second rotary member and said axially fixed first rotatable member about the circumference thereof and wherein each one end of said leaf spring elements connected to said axially movable second rotary member passes to one predetermined side of the next adjacent spring element having its other end connected to said first rotatable member and thence passes along another predetermined side of the more remote leaf spring element having its one end connected to said second rotary axially movable member;

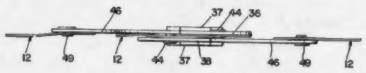
whereby said leaf spring elements are disposed in a crossing pattern without interfering with each other upon relative axial movement of said axially movable member.

4,278,162
FRICTION DISC

Ross S. Frichette, Strongsville; Ronald E. Grambo, Cleveland; Robert W. Biggs, Chagrin Falls, all of Ohio, and Thomas A. Healy, deceased, late of Rocky River, Ohio (by Antoinette M. Healy, executrix), assignors to The S. K. Wellman Corp., Bedford, Ohio

Filed Jun. 18, 1979, Ser. No. 49,140
Int. Cl.[3] F16D 13/60
U.S. Cl. 192—107 C 9 Claims

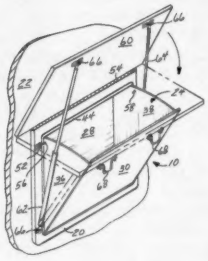
1. A clutch disc assembly comprising a keyed hub, a plurality of separate marcel springs fixed circumferentially about and extending radially from the hub, each marcel spring being formed of resilient sheet material, having a permanent nonplanar set in a free state and being capable of assuming a generally planar configuration when axially compressed, a plurality of friction buttons disposed on each face of the disc, means securing each friction button to at least one marcel spring, said securing means being free of contact with said hub and being arranged to transmit torque forces on said friction buttons to said hub exclusively through said marcel springs while permitting substantially free movement of said marcel springs between their free nonplanar and compressed planar states, each of said friction buttons including a friction surface on one face of the disc being paired in substantially complete superposition with a friction surface of a button on an opposite face of the disc.



4,278,163
WALL MOUNTED LOG CHUTE

Wayne K. Tomich, 6473 Lincoln St., Gagetown, Mich. 48735

Filed Jun. 1, 1979, Ser. No. 44,692
Int. Cl.[3] B65G 11/16
U.S. Cl. 193—34 7 Claims



1. A wall mounted chute comprising:

an opening formed in a wall, the wall having an inside surface and an outside surface;

a hopper hinged to the wall including an inside wall, an outside wall, and a closed bottom wall integrally cojoined and having an enlarged open top for the entry and removal of articles through the top from either surface of the wall;

the hopper being movable from a first position where the hopper is open at the outside surface to a second position where the hopper is open at the inside surface and closed at the outside surface of the wall;

an outer frame abutting the outer wall finishing the opening;

an inner frame abutting the inner wall finishing the opening;

said hopper further comprising:

said bottom wall extending from the outer frame to the inner frame;

said outside wall complementary to the outer frame opening and integral with the bottom wall and hinged to the outer frame along a bottom edge thereof;

said inside wall complementary to the inner frame opening and integral with an inner edge of the bottom wall;

an upper edge of the outer wall and an upper edge of the inner wall being spaced apart a distance wherein when the hopper is in the second position an opening exists between the inner frame and an upper edge of the inner wall; and

a pair of opposed side walls integral with the inside and outside walls and the bottom wall forming an enclosure with an open top.

4,278,164
BELT CONVEYOR TRANSPORTATION SYSTEM UTILIZING MAGNETIC ATTRACTION

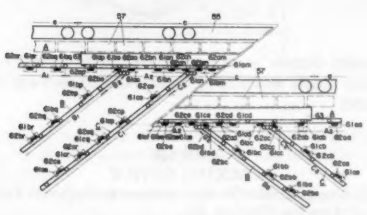
Kazumi Matsui, Yokohama; Takashi Takasue, Kawaguchi, and Masami Iwasaki, Tokyo, all of Japan, assignors to Furukawa Electric Co. Ltd., Tokyo, Japan

Division of Ser. No. 791,141, Apr. 26, 1977, Pat. No. 4,197,934. This application Aug. 30, 1979, Ser. No. 71,353

Claims priority, application Japan, Apr. 28, 1976, 51-47880; May 25, 1976, 51-59590; Jun. 15, 1976, 51-69276; Jul. 6, 1976, 51-79426; Aug. 25, 1976, 51-100647; Sep. 30, 1976, 51-116509; Oct. 6, 1976, 51-119313; Oct. 12, 1976, 51-121341; Nov. 10, 1976, 51-134185; Jan. 11, 1977, 52-1133

Int. Cl.³ B65G *17/00*; B61B *13/12*

U.S. Cl. 198—334 **5 Claims**



1. A belt conveyor type transportation system by magnetic attraction comprising at least one conveyor line including a plurality of conveyor units arranged successively, each of said conveyor units comprising endless belt means including a magnetic material as a constituent element encircled around on a pair of a driving wheel and idle wheel to be driven thereabout at a respective speed independent of the speeds of the other units, and at least one moving body disposed on said conveyor line, said moving body including magnet means for magnetically attracting said magnetic belts, whereby said moving body is moved forcibly along said conveyor line by following the circulating speed of the magnetic belt means of each of said conveyor units, said magnet means being constantly energized to produce magnetic attraction strong enough to overcome the friction force due to the load added to the magnet belt means by the magnet means, said magnet means being attracted by magnetic force towards the surface of the magnet belt means and being in facing relation therewith at less than a predetermined gap, said magnet means being constructed so that magnetic attraction between two conveyor units is made when the magnet means passes through a portion between the two conveyor units, the ratio of the magnetic attraction between the two units varying gradually with the movement of the magnet means, such that when the velocities of the magnetic belts of both units are different, the velocity of the moving body is varied linearly and gradually from the velocity of one unit to the velocity of the other unit accompanied with slip wherein guide track means is provided along said conveyor line to conform with the traveling path of said moving body, said moving body being provided with supporting means whereby the load of said moving body is transmitted to said guide track means while maintaining the magnetic pole face of said magnet means close to said magnetic belt means and also maintaining supporting means in contact with said guide track means with a relatively small frictional resistance, said conveyor line including a portion in which the surfaces of the magnetic belts of said conveyor units moving in the same direction are arranged parallel to each other with the guide track means interposed therebetween, each of said parallel conveyor units being connected to another conveyor line to provide a diverging portion or merging portion in said parallel portion, said magnet means comprising at least one pair of electromagnets each having the pole surface thereof facing one side of said guide track means whereby said electromagnet facing one side of said guide track means and said electromagnet facing another side of said guide track means are selectively energized to cause said magnet means to produce magnetic attraction with the magnetic belt means of a selected one of said conveyor units in said parallel portion.

4,278,165
TRAY CONVEYOR

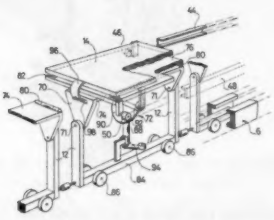
Jacob A. Nielsen, Viby, and Ole Prydtz, Silkeborg, both of Denmark, assignors to Kosan Crisplant A/S, Aarhus, Denmark

Filed May 23, 1979, Ser. No. 41,819

Claims priority, application United Kingdom, May 23, 1978, 21379/78

Int. Cl.³ B65G *47/46*

U.S. Cl. 198—365 **12 Claims**



1. A conveyor of the carrier tray type, i.e. comprising an elongated chassis and, a plurality of carrier elements interconnected by a single endless conveyor chain to form a train of carrier elements guided along said chassis, each carrier element comprising a lower support portion supporting a carrier tray operable to convey articles from a loading station past a number of unloading stations in which control means are provided for selectively causing articles to be unloaded from said carrier trays, characterized in that said chassis extend along partial lengths of mutually different linear vertical slopes and that the carrier trays are arranged so as to be tiltable about a transverse horizontal axis, tilting control means being provided adjacent said partial lengths for cooperation with said trays or the support portions thereof in such a manner that the trays are maintained, by tilting relative to the chassis in a substantially horizontal position irrespective of the varying slope of the chassis, wherein the carrier trays are arranged so as to be selectively additionally laterally tiltable for enabling unloading of articles therefrom by lateral tilting of the trays during their passage of respective selected unloading stations along the chassis.

4,278,166
ACCUMULATOR CONVEYOR

Michael S. Pirro, Jr., 9804 Butternut Dr., Crystal Lake, Ill. 60014

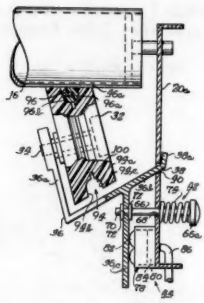
Continuation-in-part of Ser. No. 918,512, Jun. 23, 1978, Pat. No. 4,238,029. This application Aug. 27, 1979, Ser. No. 69,878

Int. Cl.³ B65G *13/06*

U.S. Cl. 198—781 **15 Claims**

1. Conveyor apparatus comprising, in combination, frame means, a plurality of carrier rollers supported by said frame means and defining a path of travel along which articles may be conveyed, and drive means operatively associated with at least one of said carrier rollers and adapted to effect rotation thereof in a manner to move an article engaged by said at least one of said rollers along said guide path, said drive means including a drive wheel having a peripheral drive surface in which is formed an annular groove, a drive cable having circular transverse cross section, means supporting said drive cable so as to define a drive reach substantially parallel to said path of travel, and means supporting said drive wheel so that its said peripheral drive surface is adapted for driving engagement with said at least one of said carrier rollers and with said reach of cable disposed between said drive wheel and said carrier

roller and received within said annular groove, said annular groove in said drive wheel having a generally semicircular transverse base configuration adapted for surface engagement with said drive cable passing therethrough, said base surface being spaced generally radially inwardly from said peripheral drive surface a distance less than the diameter of said drive cable such that said drive cable is pressed into said annular



groove to deform said drive wheel about said cable when said peripheral drive surface is in driving engagement with said at least one of said carrier rollers, said means supporting said drive wheel being adapted to selectively move said drive wheel between a first position spaced from said at least one of said carrier rollers and a second position wherein said peripheral drive surface engages said carrier roller so as to effect increased gripping of said drive wheel with said cable.

4,278,167

PACKAGE FOR RADIOPHARMACEUTICAL COMPOSITIONS

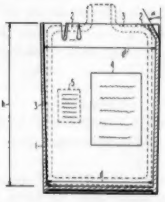
Hendrik van Rossem, Sint Maartensburg, Netherlands, assignor to Byk-Mallinckrodt CIL B.V., Petten, Netherlands

Filed May 10, 1979, Ser. No. 37,674

Claims priority, application Netherlands, May 11, 1978, 7805066

Int. Cl.³ B65D *25/54, 25/10, 85/00*

U.S. Cl. 206—45.34 **9 Claims**



1. A package for radiopharmaceutical compositions, which package comprises a transparent holder having a closed bottom and an open top and a labelled vial received in said holder, said holder including holding means for engaging said vial.

4,278,168

ARTICLE CARRIER AND BLANK THEREFOR

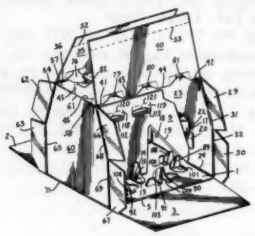
Prentice J. Wood, Hapeville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Mar. 10, 1980, Ser. No. 129,090

Int. Cl.³ B65D *75/00, 75/06, 75/56*

U.S. Cl. 206—183 **23 Claims**

1. An article carrier comprising a bottom wall, side wall means secured to the side edges of said bottom wall, a pair of end walls secured respectively to the ends of said bottom wall, a top panel secured to the upper edges of said side wall means and said end walls and disposed substantially parallel to said bottom wall, a supplementary bottom panel joined to said bottom wall, and handle means interconnected with said sup-



plementary bottom panel and upstanding from said bottom wall, said handle means being interconnected with one of said end walls.

4,278,169

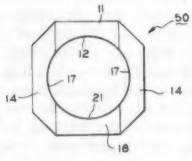
PACKING DEVICE

Boyd T. Skaggs, Louisville, Ky., assignor to Container Corporation of America, Chicago, Ill.

Filed Sep. 10, 1979, Ser. No. 73,672

Int. Cl.³ B65D *85/02*

U.S. Cl. 206—303 **1 Claim**



1. A packing device of the character described for isolating an article having arcuate contours from the walls of a shipping container, said packing device being formed from an elongated strip of paperboard and comprising:

(a) a plurality of connected panel segments each having an arcuately contoured edge adapted to contact an arcuate surface of said article and an edge spaced from said contoured edge at a side of said panel segment remote from said contoured edge and adapted to contact a wall of said container in a plane normal to said wall;

(b) said connected panel segments having the arcuate contoured edge of one segment alternating with the wall contacting edge of an adjacent panel segment;

(c) said panel segments being connected along diagonal fold lines, so that upon folding of said segments at right angles to each other the arcuately contoured edges are in contact with the arcuate surface of said article, and the spaced edge of each segment is in contact with the wall of said container.

4,278,170

CUSHIONING INSERT FOR FRANGIBLE OBJECTS

James F. Nauheimer, Chicago, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Feb. 14, 1980, Ser. No. 122,878

Int. Cl.³ B65D *85/42*

U.S. Cl. 206—422 **12 Claims**

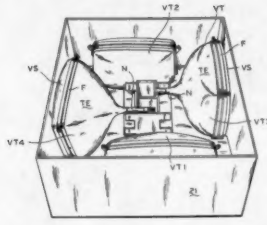
7. An insert for a shipping container for isolating from the walls of said container a plurality of necked articles of commerce such as video tube envelopes having a viewing screen at

one end and a neck at the other end, said insert being formed of a number of cut and scored blanks of paperboard or the like and comprising:

(a) a platform supported in spaced relationship to a support surface;

(b) said platform having openings conforming to contours of said tube envelopes;

(c) a center post extending through said platform;



(d) two opposed sides of said center post having the necks of a pair of tubes extending therealong and resting upon said platform;

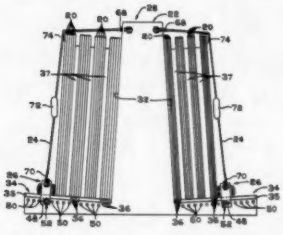
(e) a guide supported on said center post for the necks of said tubes and for the necks of other tubes lying in a plane lying above the plane of the first named pairs of necks and extending generally perpendicularly to said necks.

4,278,171

STRAP RETAINER AND COMPRESSION BLOCK

William H. Millhoan, Delaware, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1979, Ser. No. 62,603
Int. Cl.³ B65D *85/48*
U.S. Cl. 206—451 **7 Claims**



1. A strap and sheet securing assembly for use in combination with a rack of the type have a backwall mounted on a base for supporting sheets in a generally vertical position with bottom edge portion of the sheets supported on the base and strap means for securing the sheets on the rack, said securing assembly comprising:

a shoe having a first sheet engaging surface and a second sheet engaging surface spaced from the first sheet engaging surface;

first means for securing said shoe at a predetermined position on the base with the first sheet engaging surface facing the backwall and spaced a first distance therefrom;

second means for securing said shoe at the predetermined position on the base with the second sheet engaging surface facing the backwall and spaced a second distance therefrom different than the first distance; and

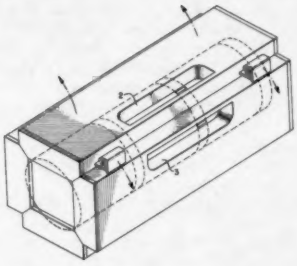
means mounting said shoe for retaining a portion of said strap means.

4,278,172

THERMOS JAR CARRIER & LUNCH TRAY

Francesco Ghebresillassie, 3739 Portal Ave., Temple Hills, Md. 20031

Filed Nov. 30, 1979, Ser. No. 98,787
Int. Cl.³ A45C *11/20*
U.S. Cl. 206—544 **3 Claims**



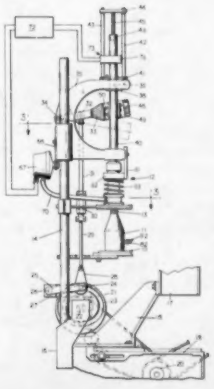
1. A thermos jar carrier and lunch tray comprising: at least of 3 tray portions, each portion having opposite sides of substantially the same height, a bottom wall and a top wall, each tray portion physically connected to each other in a row tray portion, said top wall including recesses for receiving a sandwich, utensils and like articles; each tray portions further including opposite upstanding end walls having a height greater than said side walls, said end walls including chamfered portions at each end of said end walls whereby when said tray portions being folded into an enclosure a space being formed among said tray portions for receiving a thermos jar, the carrier further including integral handles located on the bottom walls of said tray portions and a locking assembly of conventional nature to secure said tray portions shut when said tray portions are folded into an enclosure, each tray portions when in an open position forms a lunch tray.

4,278,173

COMBINED PLUG AND AIR WARP NECK FINISH GAUGE

Ernest H. Pemberton; John J. Pezzin, both of Toledo, Ohio; Darius O. Riggs, Ottawa Lake, Mich., and Thomas B. Sorbie, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 10, 1979, Ser. No. 73,596
Int. Cl.³ B07C *5/34*
U.S. Cl. 209—522 **7 Claims**



1. Apparatus for simultaneously gauging the internal diame-

ter and detecting the presence of unfilled or warped finishes of glass containers comprising:

a reference surface for supporting a container in an upright attitude;

a gauging head positioned axially above the neck of the container to be gauged;

means connected to said head for raising and lowering the head with a predetermined amplitude of movement;

said gauging head including an elongated plug having a predetermined external diameter adapted to pass through the neck opening of a glass container of acceptable size;

an annular collar surrounding said plug and adapted to move downward into sealing engagement with the top surface of the neck or finish of the container under test;

a first, vertically reciprocated, tube connected to the upper end of said plug;

a second, vertically reciprocated, tube surrounding said first tube;

an annular piston formed at the lower end of said second tube;

a cylinder connected to said annular collar, within which said annular piston is slideable; and

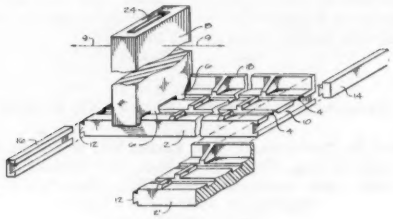
means connected to said cylinder for measuring the pressure produced therein by movement of said piston with the collar sealed to the container finish as an indication of the integrity of the sealing surface of the container.

4,278,174

DISPLAY AND STORAGE ASSEMBLY

Paul L. LeBlanc, 24 Kendra St., Apt. 6, Moncton, New Brunswick, Canada E1C 4J8

Filed Sep. 10, 1979, Ser. No. 73,808
Claims priority, application Canada, Apr. 20, 1979, 326007
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—40 **3 Claims**



1. A storage and display assembly primarily adapted for receiving cassette and eight-track tapes and comprising

an elongate base section having at least one upwardly opening longitudinal groove of female dovetail configuration, and at least one upright partition member having at least one downward projection of male dovetail configuration for sliding engagement within the at least one longitudinal groove,

one end of the base section having a transverse male dovetail configuration and the other end of the base section having a female dovetail configuration whereby identical base members may be joined endwise together to any length,

and complementary end caps to cover the ends of the base section,

the top surface of each upright member having a recess therein, and the bottom surface of each base member having a number of transverse downward projections provided uniformly theralong, the recess being adapted to receive a selected one of the downward projections enabling vertical enlargement of the assembly,

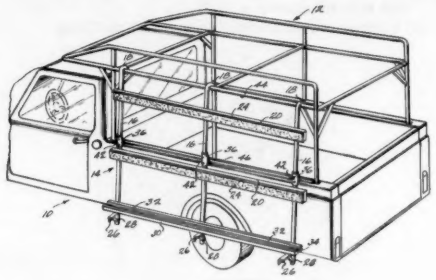
the top surface of the base sections having low transverse dividers to separate and support cassettes carried therebetween.

4,278,175

GLASS CARRYING RACK

Archie A. Jackson, P.O. Box 1332, Silver City, N. Mex. 88061

Filed Nov. 22, 1978, Ser. No. 963,048
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—41 **9 Claims**



1. A glass carrying rack comprising:

a frame adapted to be disposed on a vehicle, said frame including a horizontal member;

a plurality of upright supports;

means for bearing the weight of said rack consisting of a plurality of hook means, one of said plurality of hook means attached to the top of each of said plurality of upright supports, said hook means detachably securing said plurality of upright supports to said frame horizontal member;

means interconnecting said plurality of upright supports for supporting said glass; and

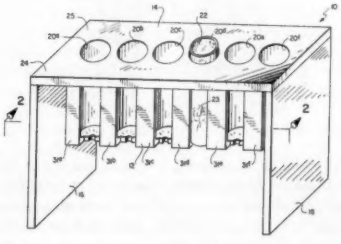
means for biasing said upright supports away from said vehicle and at a small angle with respect to the vertical.

4,278,176

GRADIENT TUBE RACK AND METHOD

Mark B. Adams, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Jul. 2, 1979, Ser. No. 53,876
Int. Cl.³ A47B *73/00*; G01N *21/01*
U.S. Cl. 211—74 **10 Claims**



1. A gradient tube rack comprising:

a gradient tube holder comprising a body having a plurality of upwardly-opening, gradient tube receivers therein, each gradient tube receiver including a longitudinal slot therein forming a viewer opening for viewing a substantial portion of the length of a gradient tube placed in the gradient tube receiver, each gradient tube receiver having a shelf in the lower end thereof for receiving an end of a downwardly-inserted gradient tube in abutting relationship;

access means in each shelf for providing access to the bottom of the gradient tube at a location coaxial with the gradient tube;

a stand for supporting the gradient tube holder above a surface, the stand comprising a vertical, planar element secured to each end of the gradient tube holder and extending forwardly therefrom; and

light shield means for shielding the viewer openings in the gradient tube holder against at least a portion of the ambient light said light shield means comprising a horizontal, planar top element extending forwardly from the top of the gradient tube holder and cooperating with the vertical, planar elements of the stand to thereby form said light shield means about said viewer openings.

4,278,177

CLOTHES HANGER WITH MULTIPLE CLOTHES SUPPORTS

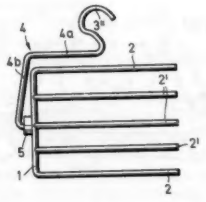
Ibrahim Fahmi, Lewrenzstr. 119, 4150 Krefeld, Fed. Rep. of Germany

Filed Aug. 17, 1979, Ser. No. 67,302

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 7824917[U]

Int. Cl.³ A47F *7/19*

U.S. Cl. 211—116 **5 Claims**



1. Clothes hanger with multiple clothes supports comprising a hook for hanging the clothes hanger, a support rod arranged vertically when said hook is positioned for hanging the clothes hanger, a plurality of substantially parallel spaced struts forming the multiple supports for the clothes hanger, said struts formed of a bending-resistant material and secured to and extending horizontally from said support rod and being spaced apart along said support rod and being located in a plane including said hook when said support rod is arranged vertically, said support rod and said struts forming a U-shaped member formed of the bending-resistant material and having a bight portion and two laterally spaced leg portions each having a first end and second end with the first end of each leg portion forming a junction with said bight portion and the second end of each said leg portion being spaced outwardly from said bight portion, said bight portion comprising said support rod and said leg portions comprising an upper and a lower said strut, at least one additional rectilinear said strut secured to said bight between said leg portions and extending outwardly from said bight, and said hook attached to said U-shaped member wherein the improvement comprises a rod forming an angle having a first leg and a second leg with said second leg bent at an oblique angle to said first leg, said first leg having a free end spaced from the junction with said second leg, said hook being formed in a part of said first leg extending from the free end thereof toward and spaced from the junction with said second leg, said second leg having a free end spaced from the junction with said first leg, the free end of said second leg being connected to said bight portion intermediate the connection of said leg portions to said bight portion.

4,278,178

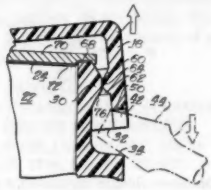
CHILD-RESISTANT CLOSURE AND CONTAINER

Milton L. Geiser, Millersville, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.

Filed May 21, 1979, Ser. No. 40,694

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—215 **6 Claims**



1. The combination of a plastic container and a pry-off closure therefor comprising:

a container having a body with an upstanding neck,

an annular shoulder of a predetermined diameter on the neck of the container and having a continuous uninterrupted planar surface,

an upstanding annular pouring spout on said container projecting upwardly from said shoulder and terminating in an upper rim about a container opening,

means defining a retaining ring means on said spout adjacent the upper rim for cooperation with the closure,

a closure for said container made of plastic and having a predetermined flexibility,

a top wall on said closure,

an annular depending skirt wall integrally formed with said top wall and having a diameter equal to or less than said predetermined diameter of said shoulder, said skirt wall having an outer cylindrical surface without any projections for prying off of said cap,

an inwardly projecting ring means on the internal wall of said closure for engaging said retaining ring means and for snapping thereover to secure said closure to said container,

said inner wall of said closure has a cylindrical surface without any projections thereon other than said inwardly projecting ring means, allowing said closure to turn to any rotative position relative to said container,

a discrete sealing element disposed beneath said top wall and having a portion for sealing with and adhering to the rim of said container to seal the same with removal of the closure from the container,

said sealing element being separable from said closure after being adhered to said container rim;

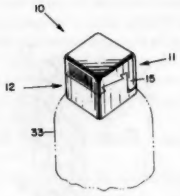
a bottom end wall on said skirt disposed closely adjacent to said continuous, uninterrupted planar surface on said shoulder at a predetermined spacing,

and walls in said skirt defining a slot extending upwardly from said bottom end wall of said skirt to adjacent said inwardly projecting ring means providing a spacing greater than said predetermined spacing with said shoulder to receive a coin or tool therein for flexing the skirt wall for prying off said closure from said container, said slot being sufficiently wide to admit a coin into the slot in wedging relationship when said closure is in rotative position relative to said container.

4,278,179
CONTAINER CLOSURE

Richard L. McWilliams, 1310 McCullough, San Antonio, Tex. 78212

Filed Dec. 10, 1979, Ser. No. 101,643
Int. Cl.[3] B65D *51/04*
U.S. Cl. 215—245 2 Claims



1. A container closure apparatus, comprising:

a container top portion for mounting on a container opening having an aperture extending there through communicating with the container opening for dispensing material from the container;

said container top portion having a first closure surface inclined downwardly from the front of said container top portion to the rear thereof, and having first and third latch means in the form of serations formed on said first closure surface and extending laterally thereacross, said aperture being disposed between said first and third latch members;

a closure member pivotally secured to the container top portion and having a second closure surface for sealing engagement with the first closure surface;

said closure member having second and fourth latch means in the form of serations formed on said second closure surface and extending laterally thereacross, and in opposing relation to said first and third latch means for releasably latching with said first and third latch means thereby securing the first and second closure surfaces in sealing relationship; and

said closure member having two spaced downwardly extending leg members positioned at opposed sides of said closure member for pivotally engaging said container top portion at pivot points spaced below said first closure surface and at the rear of said container top portion wherein the length of the said two leg members is chosen so as to provide a low arcuate movement of the closure member with respect to the container top portion and to securely latch said first and third latch means and said second and fourth latch means and retain said closure surfaces in sealing relationship.

4,278,180
CONTAINER CLOSURE WITH BREAKABLE ANNULAR RING

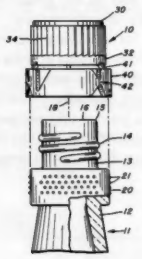
Wilburn C. Willis, Hagerstown, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 24, 1980, Ser. No. 115,027
Int. Cl.[3] B65D *41/34*
U.S. Cl. 215—252 11 Claims

1. A closure for a container having a neck comprising a distal finish portion terminating in an annular rim defining a mouth opening of the container, said closure comprising

(a) a cap engaging the finish portion of the container,

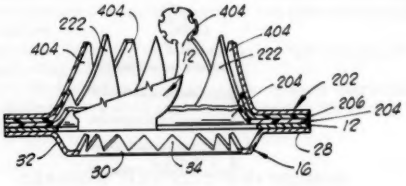
(b) an annular ring connected to the cap and located contiguous to and radially outwardly of the neck, said ring being free to rotate circumferentially with respect to the neck upon application of torque to the cap in a first direction corresponding to a fastening of the cap onto the container, and said ring being constricted radially inwardly to engage the neck upon application of torque to the cap in a second direction opposed to the first direction and corresponding to a loosening of the cap from the container, thereby frustrating removal of the cap from the container.



4,278,181
SAFETY PRESSURE RELIEF DEVICE

Loren E. Wood; Jerome D. Allen, both of Tulsa; Miner E. Clift, Broken Arrow; Jerry W. Kays, and Calvin C. Forsythe, both of Tulsa, all of Okla., assignors to BS & B Safety Systems, Inc., Tulsa, Okla.

Filed Aug. 25, 1978, Ser. No. 936,868
Int. Cl.[3] F16K *17/40*
U.S. Cl. 220—89 A 5 Claims



1. A safety pressure relief device comprising:

a flexible sealing member;

a knife means, including:

a cutting blade located about the periphery of a substantially circular opening formed in said knife means;

a flange portion located radially outward of said cutting blade; and

an annular connecting portion between said flange portion and said cutting blade;

a first rupture disk having said flexible sealing member associated with one side thereof and having said knife means located adjacent a side thereof opposite said flexible sealing member so that when said first rupture disk ruptures in response to a predetermined pressure differential caused by a first pressure on the sealing member side of said first rupture disk being a predetermined amount greater than a second pressure on the knife means side of said first rupture disk, said flexible sealing member engages said knife means, said first rupture disk including:

a plurality of arcuate slots located radially outward of said cutting blade and defining a substantially circular blowout portion therein and a retaining hinge thereon, said blowout portion being constructed for dislocation from said first rupture disk and passage through said opening in said knife means so that an opening, through which a portion of said sealing member extends to contact said knife means after rupture of said first rupture disk, is created in said first rupture disk when said first rupture disk ruptures; and

at least one rupture tab located between adjacent arcuate slots and having a notch therein; and

a second rupture disk associated with said flexible sealing

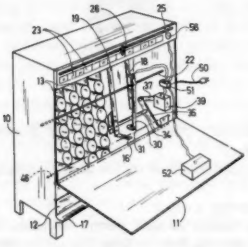
member so that said sealing member is located between said first and second rupture disks.

4,278,182

VENDING MACHINE

Allan Ahlström, Mahults Herrgard, Simlangsdalen, Sweden (31039)

Filed Sep. 7, 1979, Ser. No. 73,325
Claims priority, application Sweden, Sep. 8, 1978, 7809454
Int. Cl.³ G07F *11/24, 11/32*
U.S. Cl. 221—5 **9 Claims**



1. A vending machine comprising a number of separate, vertical compartments arranged to form a flat battery, from the lower end of which items are singularly retrievable under the control of a release mechanism,

each of said compartments being defined by two side walls, a back wall and a bottom,

an opening in the back wall of each compartment adjacent to its bottom,

a selector mechanism including a frame embracing three sides of said battery and comprising a front member, a rear member and a top member interconnecting said rear and front members,

two horizontal guides for carrying said frame while permitting displacement thereof along said battery,

a handle on said top member for manual displacement of said frame,

a sensor carried by said front member,

a feeding-out finger on said rear member adjacent said opening, and

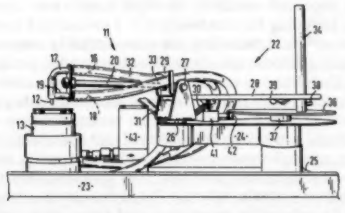
an actuating mechanism for reciprocating said feeding-out finger in and out said opening in the back of a selected compartment.

4,278,183

DISPENSING APPARATUS AND METHOD

William P. Billington, Flitwick, England, assignor to National Research Development Corporation, London, England

Filed Apr. 18, 1979, Ser. No. 31,136
Claims priority, application United Kingdom, May 4, 1978, 17684/78
Int. Cl.³ A01C *19/00;* B65G *47/36*
U.S. Cl. 221—211 **7 Claims**



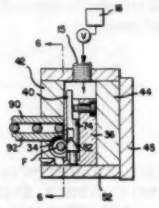
1. A method of dispensing seeds from a liquid comprising the steps of placing discrete seeds in suspension in a liquid having a free upper surface, capturing a seed against a capture orifice by means of a pressure difference across the orifice, producing relative movement between the capture orifice and the said seeds in suspension and positioning the capture orifice with the captured seed at a release location for dispensing the seed, and releasing the captured seed from the capture orifice, the first mentioned step including the step of supplying an upwardly directed flow of liquid in the said suspension of the said discrete objects such as to produce recirculatory movement of seeds in which a stream of discrete seeds is carried upwardly towards the surface of the liquid to produce a fountain of seeds rising slightly above the surface of the liquid, the capture orifice being brought to the fountain for capture of a seed.

4,278,184

ESCAPEMENT MECHANISM FOR AUTOMATIC FASTENER INSERT MECHANISMS

Clyde P. Willis, P.O. Box 335, Conover, N.C. 28613

Filed Aug. 27, 1979, Ser. No. 69,809
Int. Cl.³ B65H *5/22*
U.S. Cl. 221—233 **7 Claims**



7. In an escapement mechanism for automatic fastener devices of the type in which fasteners are removed from a reservoir and transferred one at a time to a fastener inserting device the improvement comprising:

(a) a carrier means positioned in a trackway for receiving fasteners one at a time from said reservoir when in a front position;

(b) said carrier means being moved to a second discharge position in said trackway by the application of air under pressure against the carrier means;

(c) a fastener outlet communicating with said carrier means at said second position to discharge fasteners from said carrier means into a conduit leading to said fastener inserting device; and

(d) said carrier means including at least one air bypass passageway for permitting passage of a portion of said air within said trackway under pressure into said fastener outlet;

whereby the same air that drives the carrier means also transfers the fastener to the fastener insert device.

4,278,185

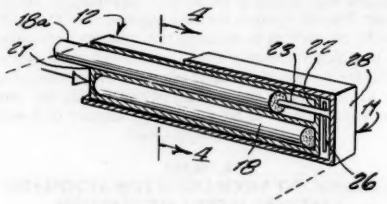
DOUBLE TEN CIGARETTE DISPENSER

Sergio J. Perez, 311 W. 97th St., Apt. 3E, New York, N.Y. 10025

Filed Jul. 19, 1979, Ser. No. 59,042
Int. Cl.³ A24F *15/04;* B60N *3/12*
U.S. Cl. 221—104 **2 Claims**

1. A double ten cigarette dispenser, comprising in combination; a frame for placement on top of an automobile dashboard, and a cigarette case that is slid rearwardly into said frame with either upper opposite or lower opposite side of said case facing upwardly in said frame; said case comprising two compartments, one upon another separated by a partition therebetween; each compartment holding a row of ten cigarettes, and each compartment being accessible for re-loading cigarettes therein by pivoted doors on opposite sides of said case; said

frame comprising a receptacle mounted upon a plate fitted with rubber pads therebeneath for resting upon said dashboard; said receptacle having an opening at a front thereof for slidably receiving said case, and a forwardly extending push rod near one corner of a rectangular rear wall of said receptacle; and said case having a pair of holes near opposite diagonal corners



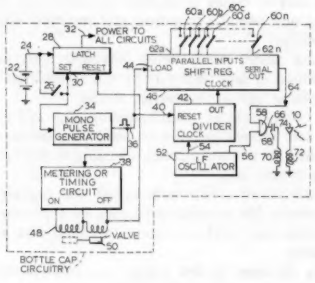
of a rectangular rear wall thereof, and being selectively entered by said push rod when said case is slid in said frame with either said case upper or lower side thereof facing upwardly for alignment with said push rod, and a spring loaded pressure plate in front of said receptacle rear wall, normally urging said case away from said push rod.

4,278,186

METHOD AND APPARATUS FOR BEVERAGE DISPENSING CONTROL AND QUANTITY MONITORING

Robert D. Williamson, 7350 NW. First Ct., Pembroke Pines, Fla. 33024

Filed Sep. 8, 1978, Ser. No. 940,464
Int. Cl.³ B67D *5/08*
U.S. Cl. 222—36 **6 Claims**



1. A method for beverage dispensing control and quantity monitoring comprising the steps of:

setting re-programmable data switches disposed within a given bottle control cap for impressing therein data bits to identify that cap from others in a system of programmable control caps;

opening a valve in the control cap;

activating electronic circuitry disposed within the control cap that both serializes the data bits impressed therein and also transmits a radiated signal containing the serialized data bits;

receiving in a remote location the radiated signal containing the serialized data bits; and

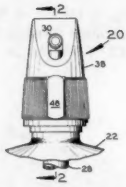
accumulating such radiated signals from all control caps within the system in a data processing device.

4,278,187

TRIGGER LOCK SYSTEM FOR PUMP

Warren J. Luedtke, Fish Creek, Wis., assignor to Security Plastics, Inc., Miami Lakes, Fla.

Filed Dec. 13, 1979, Ser. No. 103,363
Int. Cl.³ B67B *5/00*
U.S. Cl. 222—153 **6 Claims**



1. In a dispensing pump assembly for dispensing product from a container,

a pivotally reciprocable lever for actuating said pump assembly;

said lever having a catch;

and locking means in said pump assembly for releasably engaging said catch to lock said lever in a depressed position;

said pump assembly including a closure and a housing rotatable on said closure;

and said locking means including a lip on said closure having a recess therein for receiving said catch;

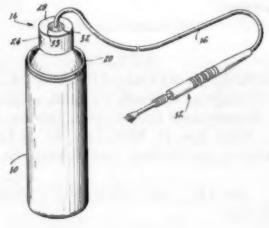
said housing and lever being rotatable to align said lever with said recess, said lever being depressible to insert said catch in said recess, and said housing and lever being further rotatable to engage said inserted catch with said lip.

4,278,188

REMOTE DELIVERY NOZZLE ASSEMBLY FOR PRESSURIZED CONTAINER

George M. Stephenson, 190 Chestnut Ridge, Bethel, Conn. 06801, and David E. Begin, Brookfield, Conn., assignors to George M. Stephenson, Bethel, Conn.

Filed Oct. 1, 1979, Ser. No. 80,589
Int. Cl.³ B67D *5/06*
U.S. Cl. 222—182 **5 Claims**



1. An improved remotely operated pressurized container assembly including the combination of a pressurized container provided with an upstanding rim concentrically surrounding an upstanding hollow valve stem for releasing the pressurized contents therefrom in response to shifting of the valve stem relative to the container from a normal disarmed mode position to a depressed armed mode position, a remote delivery nozzle for selectively controlling the release of said contents from said container, conduit means coupled with said remote delivery nozzle for carrying said contents from said container to said remote delivery nozzle, wherein the improvement comprises:

means for releasably connecting said valve stem with said conduit means,

said connecting means including

(1) cap means for enclosing said valve stem and including an annular peripheral edge frictionally engaging said upstanding rim of said container whereby to removably mount said cap means on said container, said cap means including an aperture therein.

(2) a connector element extending through said aperture in said cap means and secured to the latter, said connector element having a bore therethrough defining first and second openings therein, said first opening being flowably coupled with said conduit means, said valve stem being sealingly received within said bore and extending through said second opening in said connector element, said connector element further including surface portions adapted to engage said valve stem and force the latter to shift from said disarmed mode position thereof to said armed mode position thereof when said cap means is installed on said container, and

(3) means circumscribing said connector element for providing a seal between said cap means and said connector element to prevent escape of the contents of said container from said cap means through said aperture into the surrounding atmosphere,

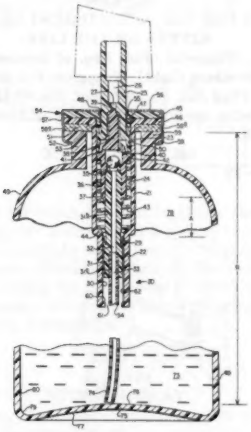
said cap means is formed from a plastic material and is tubular in shape, one extremity of said cap means being enclosed by an end wall, said aperture being disposed in said end wall, said end wall including an annular area of weakness therein curcumscribing said aperture to facilitate flexion of said end wall adjacent said aperture.

4,278,189

ACCUMULATIVE PRESSURE PUMP

Donald C. Kirk, Jr., Naugatuck, Conn., assignor to Ethyl Products Company, Richmond, Va.

Filed Dec. 17, 1979, Ser. No. 104,120
Int. Cl.³ B05B 9/043
U.S. Cl. 222—321 **15 Claims**



1. In a pump dispenser adapted to be attached to a container holding a liquid to be dispensed, the combination comprising:

(a) means defining a cylindrical pump body having a first section and a second section, said second section being of a smaller diameter than said first section;

(b) a first piston received in said first body section and having an attached first stem means having a fluid passage therein extending out of said body section;

(c) a second piston received in said second body section and having an attached second stem means having a fluid passage in its lower portion and a solid upper portion normally contacting said first stem means to close the fluid passage therein;

(d) a dip tube means having its upper portion passing through an opening of larger diameter than said dip tube that is provided in the lower end of said second body section, the dip tube upper end being coupled to said second piston and movable therewith; and

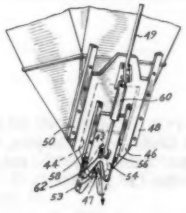
(e) means provided on the wall of said second body section to cooperate with said second piston to permit air entrapped in said first and second body sections to be discharged through the opening in the lower end of said second body section into the air space of said container upon the priming of the pump.

4,278,190

CONCRETE DISCHARGE HOPPER

Robert F. Oory, Hampshire, and Charles J. Arndt, Elk Grove, both of Ill., assignors to Rotec Industries, Inc., Elmhurst, Ill.

Filed Jan. 7, 1980, Ser. No. 109,929
Int. Cl.³ B65G 41/00
U.S. Cl. 222—561 **12 Claims**



1. A hopper for controlling a flow of concrete to a moving belt comprising:

(a) a plurality of inclined side walls converging toward the bottom of said hopper;

(b) one of said side walls being flat and having a concrete discharge opening therethrough;

(c) primary gate means, slidably mounted on said one of said side walls and capable of moving across said concrete discharge opening, for shearing said flow of concrete, said primary gate means terminating at its lower end in an inverted substantially V-shaped opening;

(d) means for actuating said primary gate means and causing said primary gate means to progressively close said concrete discharge opening; and

(e) stop means connected with said hopper for arresting downward movement of said primary gate means;

(f) a secondary gate mounted on said primary gate means for closing said inverted substantially V-shaped opening.

4,278,191

SPARE TIRE CARRIER

Lynn Mecham, 465 W. 800 South, Alpine, Utah 84003

Filed Dec. 10, 1979, Ser. No. 102,248
Int. Cl.³ B62D 43/04
U.S. Cl. 224—42.21 **11 Claims**

1. A spare tire carrier comprising,

tube support means for rigid attachment to a vehicle;

lifting means fitted within said tube support means and arranged for moving vertically therein;

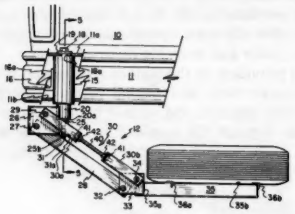
means for operating said lifting means to move it vertically;

chain means secured to said lifting means to move therewith;

a support bar also secured to said chain means and pivotally connected at its ends, respectively, to a lifting pivot block and platform pivot block;

means for maintaining said lifting pivot block in essentially a stationary attitude;

tire platform means secured to extend from said platform pivot block for maintaining a spare tire thereon; and



means arranged between said lifting and platform pivot blocks for limiting rotation of said pivot blocks.

4,278,192

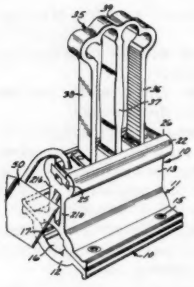
SKI AND POLE CARRYING BRACKET

Frank Sazegar, 1978 Gladwick St., Compton, Calif. 90220

Filed Jan. 2, 1980, Ser. No. 109,142

Int. Cl.³ B60R *9/12*

U.S. Cl. 224—315 **6 Claims**



1. Apparatus for securing various skiing articles to each other and for releasably attaching the collected skiing articles to an automobile, comprising:

a support assembly conformed for attachment to said automobile including a transverse opening of substantially rectangular section communicating through an elongate slot to the exterior thereof;

a base plate of substantially rectangular plan form adapted for insertion on the interior of said transverse opening;

a fork-like bracket assembly having a first and second exterior leg on the distal sides thereof and an interior leg disposed therebetween, said interior leg being shorter than said first and second exterior legs, said first and second exterior legs and said interior leg being dimensioned for receipt in said slot;

pivoting means connected to the free end of said first exterior leg and engaged to said base plate for pivotal engagement of said bracket assembly to said base plate; and

latch means connected to the free end of said second exterior leg for engaging said base plate in a first or second spaced alignment relative said pivoting means.

4,278,193

GLASS BREAKING AND SEPARATING APPARATUS AND METHOD

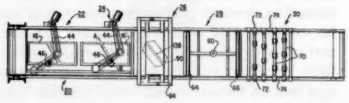
Gordon F. Pereman, Columbus, and John D. Kellar, Pontypool, both of Canada, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 15, 1979, Ser. No. 39,219

Claims priority, application Canada, Feb. 28, 1979, 322445

Int. Cl.³ C03B *33/04*

U.S. Cl. 225—2 **17 Claims**



1. The method of scoring and breaking out glass blanks of predetermined outline shape from a glass sheet comprising:

(a) applying first and second score line patterns to a piece of glass, the first and second score line patterns each including a respective score line segment, which score line segments extend adjacent to one another, said score line patterns defining, at least in part, the outlines of glass blanks to be subsequently broken out from the piece of glass;

(b) applying forces to the piece of glass in such a way as to sever the glass along one of the score line segments and to split the piece of glass into two parts each having a respective one of said patterns thereon;

(c) laterally separating the two glass parts a selected distance away from one another; and

(d) applying break-out forces to the laterally separated glass parts to complete the severing of the parts along their respective score line patterns.

4,278,194

MACHINE FOR THE ATTACHMENT OF BUTTONS, RIVETS OR THE LIKE

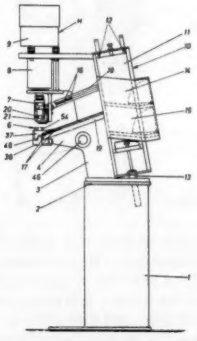
Metin Ersoy, Wuppertal, Fed. Rep. of Germany, assignor to Schaeffer-Homberg GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,420

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826418

Int. Cl.³ A41H *37/00*

U.S. Cl. 227—18 **8 Claims**



1. In a machine for the attachment of fasteners on clothing pieces, the fasteners comprising upper parts and lower parts adapted to be attached together by upper and lower tool stamps on the clothing pieces at an attachment position, with a magazine adapted to store the parts of the fasteners and being

oriented laterally relative to the attachment position, a feed rail extending from the magazine up to a vicinity of the attachment position feeds the lower parts to this vicinity, and swingable means for transferring the lower parts from this vicinity into the attachment position, the improvement wherein

said feed rail has an exit mouth at said vicinity and constitutes means for feeding the lower parts to said exit mouth in a substantially edgewise-upright position, said exit mouth is located at an angle offset by about 90 degrees relative to the attachment position,

a slide surface extends from said exit mouth up to the attachment position, said slide surface is circularly arc-shaped, beginning tangentially from said exit mouth and running substantially tangentially into the attachment position,

a rotatable ring section having a bearing surface rotatably running on said slide surface, said ring section on a front end thereof forms a reception pocket constituting means for receiving one of said lower parts, respectively, at said exit mouth with said one lower part substantially oriented in the edgewise-upright position and positioned against said slide surface and running against said slide surface in said reception pocket during rotation of said ring section on said slide surface, directly delivering and transferring said one lower part into the attachment position and simultaneously turning said one lower part via said slide surface from said edgewise-upright position substantially into a horizontal position at the attachment position, and

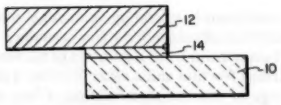
said ring section on said said front end has a narrow edge, the latter during the rotatable running of said ring section on said slide surface being positioned closingly against the exit mouth of the feed rail.

4,278,195

METHOD FOR LOW TEMPERATURE BONDING OF SILICON AND SILICON ON SAPPHIRE AND SPINEL TO NICKEL AND NICKEL STEEL AND APPARATUS USING SUCH A BONDING TECHNIQUE

Gurnam Singh, Willow Grove, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 1, 1978, Ser. No. 965,350
Int. Cl.³ B23K *35/28;* **H05K** *5/06*
U.S. Cl. 228—123 **10 Claims**



1. A method for bonding nickel to silicon comprising the steps of providing an aluminum layer between an overlapping area of a nickel layer and a silicon layer, pressing the composite layered structures together under a pressure of approximately 100 psi and subjecting the compressed structure to a temperature of approximately 640 degrees C. in a reducing atmosphere for approximately five minutes.

4,278,196

STORAGE TRAY

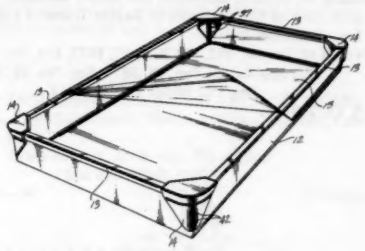
Harold H. Ford, Claremont, Calif., assignor to Acme General Corporation, San Dimas, Calif.

Filed Dec. 26, 1979, Ser. No. 106,457
Int. Cl.³ B65D *5/20;* **A47B** *7/02*
U.S. Cl. 229—30 **54 Claims**

1. A tray comprising:

a flat elastically bendable sheet for forming the bottom and sides of the tray without creasing the sheet, each corner of the sheet being notched for overlapping edges of the notch upon elastic bending of edges of the sheet into a plane approximately normal to the plane of the center of the sheet;

a plurality of rigid side rails each having a generally U-shaped cross section for receiving an edge of the sheet between the notches, the rails collectively forming a rim of the tray; and



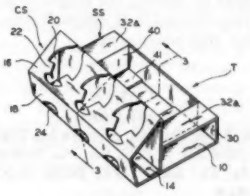
a plurality of corner connectors, each corner connector including means for gripping each of a pair of adjacent rails at a corner of the tray and means for securing both overlapping edges of a notch at the corner of the tray.

4,278,197

CARRY-OUT TRAY

Marc C. Scheinbaum, Libertyville, and Anne L. Winburn, Lake Forest, both of Ill., assignors to Container Corporation of America, Chicago, Ill.

Filed Feb. 25, 1980, Ser. No. 124,439
Int. Cl.³ B65D *5/36*
U.S. Cl. 229—30 **9 Claims**



1. A collapsible carry-out tray having a pair of adjacent compartments separated from each other and being formed from a unitary blank of foldable paperboard or the like, comprising:

(a) a generally rectangular bottom wall extending under both of said compartments;

(b) a longitudinally disposed, vertical partition wall secured to and extending upwardly from said bottom wall intermediate the front and rear sides thereof;

(c) top and front walls foldably joined to each other and to said partition wall and the front edge of said bottom wall, respectively;

(d) said top and front walls being disposed at acute and obtuse angles to the partition and bottom walls, respectively, to define therewith a tubular first compartment structure of generally trapezium shaped cross-section;

(e) upper and rear walls foldably joined to each other and to said partition wall and the rear edge of said bottom wall, respectively;

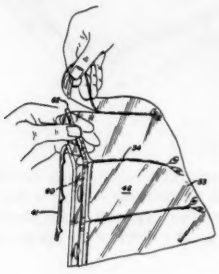
(f) said upper and rear walls defining with said partition and bottom walls a tubular second compartment;

(g) said top and upper walls having openings therein to provide access to respective compartments.

4,278,198
FLEXIBLE COLLAPSIBLE CONTAINER WITH A STIFFENING MEMBER

William W. Norton, Deerfield, and Henry Boehmer, Mt. Prospect, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 852,422, Nov. 17, 1977, Pat. No. 4,175,994.
This application Jun. 18, 1979, Ser. No. 49,762
Int. Cl.[3] B65D *33/02, 33/14*
U.S. Cl. 229—55 10 Claims

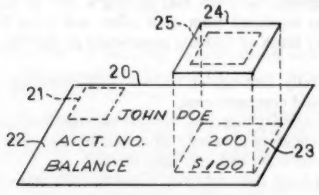


1. A flexible, collapsible container comprising a pair of facing sheet sections sealed together at most of their periphery; a stiffener bar section composed of a material different from said facing sheet sections positioned transversely adjacent one end of said container between said facing sheet sections; seal lines between said sheet sections on each side of, adjacent to and parallel to said stiffener bar section in the container to isolate and retain said stiffener bar section, said stiffener bar section being of less width than said container in its as-made configuration, said sheet sections being made of a plastic material which shrinks on heating, the length of said stiffener bar section being proportioned to be essentially equal to the width of said container after autoclaving.

4,278,199
POST CARD

Yoshio Tanaka, 2-7-6, Shibuya, Shibuya-ku, Tokyo, 150, Japan

Filed Jul. 9, 1979, Ser. No. 56,038
Int. Cl.[3] B65D *27/32;* B42D *15/02*
U.S. Cl. 229—92.8 10 Claims



1. A post card mailable at a post card postage rate for sending information, a portion of which normally is viewable and at least a portion of which normally is concealed from view, said post card comprising

a base member of post card size and shape,

an opaque cover member being less than one-half the size of said base member attached to said base member for concealing from view a hidden information area at one of the facing surfaces of the cover and base members,

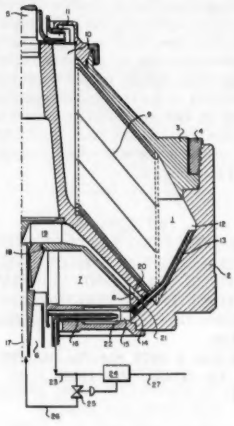
at least a portion of one of said cover member and base member adjacent said cover being removable for viewing by the recipient of the post card of the normally hidden information areas, and

impression transfer means of substantially the same size as said cover member between said cover and base members for producing an image of an impression at one of the facing surfaces of the cover and base members from an impression at an outer face thereof.

4,278,200
CONTINUOUSLY OPERATING CENTRIFUGAL SEPARATOR DRUM FOR THE CONCENTRATION OF SUSPENDED SOLIDS

Hubert Gunnewig, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Sep. 20, 1979, Ser. No. 77,469
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842967
Int. Cl.[3] B04B *11/00*
U.S. Cl. 233—16 4 Claims



1. In a continuously operating centrifugal separator suitable for concentration of suspended solids contained in a liquid feed material, having a drum for separation of the feed material into a concentrated fraction and a clear fraction, a paring chamber for discharge of concentrated fraction, a first passageway for delivery of concentrated fraction from the periphery of the drum to said paring chamber, and a second passageway for receiving concentrated fraction from the paring chamber and discharge of concentrated fraction from the drum, the improvement which comprises conduit means for recycling concentrated fraction which has been conveyed to the paring chamber to the first passageway.

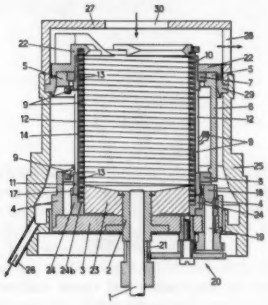
4,278,201
CONTINUOUS CENTRIFUGAL SEPARATOR

Serge Cailliot, 38, Rue du Bois de Boulogne, 9220 Neuilly-sur-Seine, France

Filed Jun. 18, 1979, Ser. No. 49,386
Claims priority, application France, Jun. 19, 1978, 78 18312
Int. Cl.[3] B04B *1/00*
U.S. Cl. 233—27 4 Claims

1. In a continuously renewing separator with a rotating cylindrical wall of the type comprising a helicoidal winding with closely adjacent turns of an endless belt which is looped about itself so as to unwind slowly at one end and rewind at the other end while advancing axially at the same time as it is drawn into continuous rotation at a greater speed than the axial advancement, the belt being disposed for this purpose in a rotating first cage turning at the greater speed and comprising

on the one hand a device for supporting and guiding the cylindrical wall having adjoining turns and including progressive unwinding and rewinding guides located fixedly in said cage, with a slow and continuous drive means for moving the belt in relation to said cage, the improvement wherein said supporting and guiding device, as well as said drive means are constituted



at the same time by a second cylindrical cage coaxial with the first cage and comprising equidistant bars which are integral with two continuous terminal drumheads and which project inside said drumheads, and wherein said belt comprises exterior notches cooperating with the projecting portion of said bars to insure engagement, said second cage being driven at a speed which is slightly different from that of the first cage.

4,278,202

CENTRIFUGE ROTOR AND COLLAPSIBLE SEPARATION CONTAINER FOR USE THEREWITH

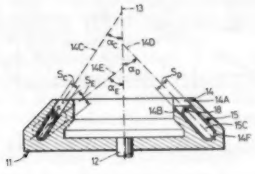
Johan E. H. Westberg, Lidingö, Sweden, assignor to Separek Teknik AB, Stockholm, Sweden

Filed Jul. 25, 1979, Ser. No. 60,819

Claims priority, application Sweden, Jul. 25, 1978, 7808129

Int. Cl.³ B04B *1/00, 5/00*

U.S. Cl. 233—27 **6 Claims**



1. A centrifuge rotor having a recess for receiving a separation container and extending along a circular axis centered on the axis of rotation of the rotor, the radially outer sidewall of the recess being inclined with respect to the axis of rotation of the rotor so that during rotation of the rotor centrifugal separation of liquid contents of a collapsible separation container received in the recess takes place under the influence of the angle effect, the angle of inclination of the radially outer sidewall of the recess increasing from a minimum value at a first point on the circular axis to a maximum value at a second point on the circular axis located near the first point.

6. A collapsible container for use in a centrifuge rotor having a conical pocket receptive of the container, said container being made of flexible sheet material, and having tubes attached thereto for conveying liquid into and out of the container, said container comprising a length of tube or hose having the opposite ends thereof closed and free of each other, the cross-sectional area of the lumen of the length of tube or hose being enlarged at one of said opposite ends; said tubes for conveying liquid into and out of said chamber including a plurality of outlet tubes communicating with the container at said one enlarged end and an inlet tube entering said container at said one enlarged end but communicating with the interior of said container adjacent the opposite end, all said tubes being secured to said container at said one enlarged end.

4,278,203

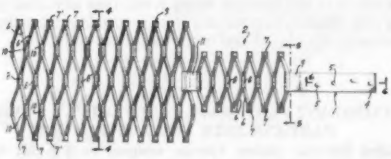
ANTISKID TRACTION DEVICE FOR VEHICLE WHEEL

Real Martin, 1206 Saint-Louis, Thetford Mines, Quebec, Canada (G6G 4C6)

Filed Feb. 26, 1979, Ser. No. 14,996

Int. Cl.³ E01B *23/00*

U.S. Cl. 238—14 **8 Claims**



1. An antiskid traction device for a vehicle wheel tire comprising first and second elongated, antiskid traction sections articulated end to end, and a tongue section protruding from the outer end of said second antiskid traction section, said three sections having a common longitudinal axis, said first and second antiskid traction sections having gripping means protruding from both main faces thereof, said first antiskid traction section being relatively wider than said tire, said second antiskid section having a width nearly equal to, but smaller than, the width of said tire and intermediate the width of said tongue section and of said first antiskid traction section, and interposed between the latter and said tongue section, said tongue section being a strip which is resilient, thin and flat both longitudinally and transversely, which is substantially narrower than said tire, has upward projections punched out therein for tractive engagement of said tire thereon, and being without projections at its underside, said tongue section having an upwardly-inclined leading edge and forms a runner element which can be slid under said tire, said tongue section longitudinally taking the circumferentially curved shape of said tire and, when released, resiliently springing back to its longitudinally flat shape.

4,278,204

RAIL CLIP

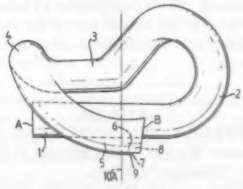
David W. Miller, Retford, England, assignor to Pandrol Limited, London, England

Filed Nov. 27, 1979, Ser. No. 98,378

Claims priority, application United Kingdom, Nov. 29, 1978, 46519/78

Int. Cl.³ E01B *9/48*

U.S. Cl. 238—349 **13 Claims**



1. A rail clip, for holding down a railway rail, comprising a rod of resilient metal, at least 8 mm. thick, which has been bent so that it comprises, proceeding from one end of the rod to the other end, a first portion which constitutes a substantially straight leg, a second portion in the form of a reverse bend, a

third portion beside the first portion, a fourth portion in the form of a reverse bend and then a fifth portion which terminates at said other end of the rod and is beside the first portion, the configuration being such that when the clip is in a position in which the first portion is horizontal and the lowest points at opposite ends of the first portion lie in the same horizontal plane as one another and the lowest points on the third and fifth portions lie in the same horizontal plane as one another, a section of the fourth portion lies vertically above and crosswise over the axis of the first portion and when the clip is viewed from above the third and fifth portions appear to be on opposite sides of the first portion, the clip further comprising, near said other end of the rod, on the under-side of the clip when the clip is in said position, a step which is at most 2 mm. high, measured vertically, the lowest point on the step, when the clip is in said position, being lower than any other part of the clip which is beyond said step, proceeding from the third portion of the clip to said other end of the rod.

4,278,205

CONSTANT FLOW RATE FLUID SUPPLY DEVICE, PARTICULARLY FOR A SPRAY GUN

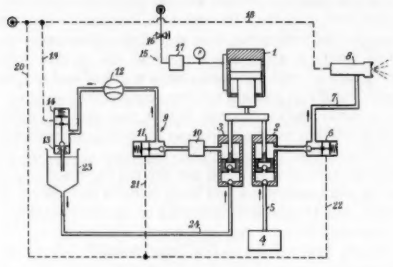
Michel Binoche, Stains, France, assignor to S K M, Societe Anonyme, Stains, France

Filed Apr. 25, 1979, Ser. No. 33,302

Claims priority, application France, Apr. 28, 1978, 78 12704; Mar. 16, 1979, 79 06694

Int. Cl.³ B05B *12/10*

U.S. Cl. 239—75 **21 Claims**



1. A device for supplying at a constant and adjustable flow rate a fluid utilizing apparatus with at least one fluid having variable viscosity, comprising a first fluid source delivering said variable viscosity fluid, a first fluid circuit connecting said first fluid source to the fluid utilizing apparatus, a second fluid circuit in which flows a constant viscosity fluid, two volumetric pumps mechanically coupled so that their flow rates are in a fixed relationship, a first one of the two pumps being inserted in the first fluid circuit, whereas the second pump is inserted in the second fluid circuit, and first adjusting means inserted in the second fluid circuit, downstream of the second pump, for adjusting the flow rate of the constant viscosity fluid, said first flow rate adjusting means comprising an adjustable pressure reducer connected to the output side of the second pump, and a first calibrated nozzle of adjustable diameter in series with the pressure reducer.

4,278,206

NON-PRESSURIZED DISPENSING SYSTEM

Samuel B. Prussin, Big Sur, Calif., assignor to AE Development Corporation, Minneapolis, Minn.

Filed Apr. 13, 1979, Ser. No. 29,630

Int. Cl.³ B05B *11/04*

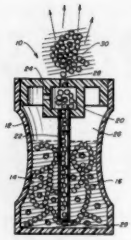
U.S. Cl. 239—327 **23 Claims**

1. A system for dispensing a material to a target comprising in combination:

a container including;

a compartment within the container receiving a body of a water-in-air suspension comprising fine droplets of water stabilized by an interfacial barrier of very fine hydrophobic metal oxide particles as a first phase and air as a second phase, said material being present in either of said phases;

a terminal orifice capable of applying a preselected shear to said suspension in an amount effective to at least partially



destabilize the suspension and cause coalescence of said droplets;

means communicating the compartment with the outlet orifice; and

means for propelling the suspension through the orifice toward the target.

4,278,207

BREAKING MACHINE WITH AUTOMATIC RECYCLING OF THE FIBRES AND THE PROCESS FOR ITS OPERATION

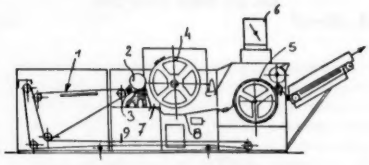
Andre Morel, La Croix du Mont, Cours (Rhone), France

Filed Mar. 30, 1979, Ser. No. 25,477

Claims priority, application France, Mar. 30, 1978, 78 10003

Int. Cl.³ B02C *13/286, 25/00*

U.S. Cl. 241—4 **12 Claims**



1. A breaking machine for treating fibers, said machine comprising:

means for feeding fibers into said module;

at least one disintegrator module having a spiked disintegrator drum for disintegrating fibers fed into said feeding means;

means for layering said fibers, said layering means located separate from said disintegrator module, said layering means further comprising a perforated drum; and means for suction engaging said perforated drum to maintain a lower pressure inside said drum than outside said drum;

passage means disposed between said disintegrator module and said layering means, said passage means carrying said fibers from said module to said layering means for layering the disintegrated fibers;

storage means positioned adjacent said layering means for receiving said fibers from said layering means;

regulating means positioned near said storage means for receiving fibers from said storage means and regulating said fibers;

means for conveying said fibers, said conveying means disposed between said regulating means and said disintegra-

tor module, said conveying means carrying said fibers from said regulating means to said module; and

control means connected to all of said feeding means, disintegrator module, layering means, passage means, storage means, regulating means, and conveying means for controlling said module and all of said means so as to allow a predetermined number of successive automatic passes of said fibers through said machine.

4,278,208
COMMINUTION OF MATERIALS

Hugh R. Falcon-Steward, St. Austell, England, assignor to English Clays Lovering Pochin & Co., Ltd., St. Austell, England

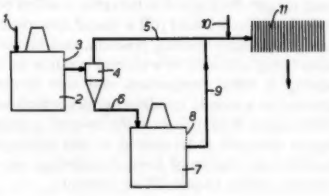
Continuation-in-part of Ser. No. 865,242, Dec. 28, 1977, Pat. No. 4,166,582. This application Jul. 24, 1979, Ser. No. 60,198

Claims priority, application United Kingdom, Jan. 19, 1977, 2185/77

The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.

Int. Cl.³ B02C *23/18*

U.S. Cl. 241—16 **15 Claims**



1. A method of comminuting a solid material comprising calcium carbonate to obtain a comminuted solid material which contains at least 60% by weight of particles smaller than 2 microns equivalent spherical diameter, and which is readily redispersible in water to form a high solids fluid suspension, which method comprises the steps of:

(a) forming an aqueous suspension of the solid material which has a solids content in the range of from 5% to 50% by weight of dry solids, is substantially free of particles larger than 10 mm, and contains sufficient dispersing agent to prevent the formation of agglomerates during the subsequent comminution of the solid material;

(b) comminuting the solid material in the suspension formed in step (a) by agitating the suspension in admixture with a particulate grinding medium which consists of particles not larger than about 20 mm and not smaller than about 0.15 mm;

(c) separating from the product of step (b) an aqueous suspension containing comminuted solid material;

(d) subjecting the aqueous suspension containing comminuted solid material to a particle size classification so as to obtain an aqueous suspension of a fine product at least 60% by weight of which consists of particles smaller than 2 microns equivalent spherical diameter, and a coarse product; and

(e) dewatering the aqueous suspension containing the comminuted fine product, while said product is in a flocculated state brought about by counteracting the effects of said dispersing agent, but without the addition of polymeric flocculants; whereby to facilitate both said dewatering and subsequent formation from said comminuted product of a high solids deflocculated suspension.

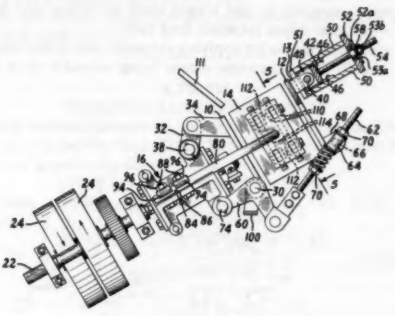
4,278,209
APPARATUS FOR RECONDITIONING BAGGED MATERIAL

Gustavo Lobo, Jr., Bay Hills, and Charles G. Hallbert, Coral Springs, both of Fla., assignors to Lobo-Kane, Inc., New York, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,323

Int. Cl.³ B02C *1/10*

U.S. Cl. 241—30 **9 Claims**



1. In an apparatus for reconditioning bagged material comprising opposed spaced front and back breaker plates, opposed spaced crusher plates arranged generally at right angles to said breaker plates to define a rectangular space for receiving bagged material, and eccentric means for cyclically moving said breaker plates toward and away from each other and synchronously moving said crusher plates toward and away from each other, wherein said crusher plates move away from each other as said breaker plates move toward each other, the improvement wherein said crusher plates comprise one of a first pair of crusher plates and a second pair of crusher plates, and coupling means between said eccentric means and said crusher plates for rigidly coupling a selected one of said first pair and said second pair to said eccentric means, and means for detachably mounting a selected one of said first and second pairs to said coupling means for rigidly coupling said pair to said eccentric means for moving the crusher plates toward and away from each other, generally at right angles to said breaker plates to define a space for receiving the bags, wherein said selected one of said first and second pairs define a space for receiving bagged material of pre-selected cross sectional area maintained substantially constant during bag-crushing movement of the plates.

4,278,210
FORAGE HARVESTER FEED ROLL MOUNTING MECHANISM

Edward H. Priepke, Stevens, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Feb. 6, 1979, Ser. No. 9,978

Int. Cl.³ B02C *18/22*

U.S. Cl. 241—222 **8 Claims**

1. In a forage harvester having

(a) a housing,

(b) a rotatable cutterhead mounted in said housing,

(c) a shearbar mounted in said housing forwardly of and closely adjacent to said cutterhead and cooperable therewith for comminuting crop material,

(d) front and rear upper rotatable feed rolls generally tandemly-arranged in said housing forwardly of said cutterhead and said shearbar,

(e) lower feed means mounted in said housing generally below and cooperable with said upper feed rolls for conveying crop material to said cutterhead across said shearbar,

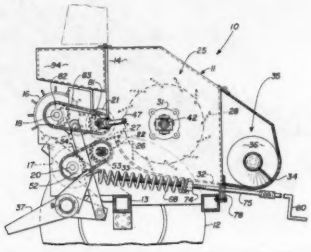
(f) improved means mounting said front and rear upper feed rolls for movement away from said lower feed means from a lower operative feeding position to an upper inoperative position generally above said lower feed means and remote from said cutterhead and shearbar to thereby expose and render said shearbar readily accessible for servicing or the like, said improved mounting means comprising

a torque shaft,

means for rotatably mounting said torque shaft on said housing,

means coupled to said torque shaft for lifting said front and rear upper rotatable feed rolls,

actuatable means for applying rotative force to said torque shaft, said actuatable means being movable to a first



position for placing said torque shaft in a first condition under which said front and rear upper feed rolls are biased downwardly in said lower operative feeding position via said coupling means, said actuatable means also being movable to a second position for placing said torque shaft in a second condition under which said bias on said front and rear upper feed rolls is relaxed for facilitating movement of said front and rear upper feed rolls to said upper inoperative position via said coupling means, and

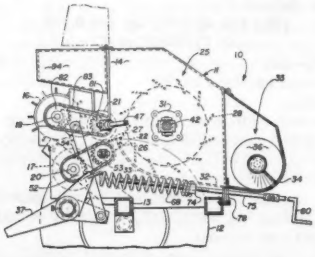
drive means coupled to said upper rear feed roll under conditions where said upper feed roll is in its operative position and means for detaching said drive means to permit movement of said rear roll from said lower operative position to said inoperative position.

4,278,211

TENSIONING MECHANISM FOR FORAGE HARVESTER FEED ROLL ASSEMBLY

Joe E. Shriver, East Earl, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Feb. 6, 1979, Ser. No. 9,982
Int. Cl.[3] B02C *18/22*
U.S. Cl. 241—222 **3 Claims**



1. In a forage harvester, the combination comprising:

(a) a housing,

(b) a rotatable cutterhead mounted in said housing,

(c) a shearbar mounted in said housing forwardly of and closely adjacent to said cutterhead and cooperable therewith for comminuting crop material,

(d) an upper rotatable feed roll generally arranged in said housing forwardly of said cutterhead and said shearbar,

(e) improved tensioning means for biasing said upper feed roll to a lower operative feeding position,

(f) lower feed means mounted in said housing generally below and cooperable with said upper feed roll for conveying crop material to said cutterhead across said shearbar under conditions where said upper feed roll is in said lower position,

(g) means for lifting said upper feed roll away from said lower feed means to an upper inoperative position generally above said lower feed means and remote from said cutterhead and shearbar to thereby expose and render said shearbar readily accessible for servicing or the like,

(h) said lifting means comprising a torque shaft mounted on said housing, and linkage means coupled to said torque shaft for maintaining said feed roll in a non-askew relationship thereto,

(i) wherein said improved tensioning means comprise

a spring connected to said lifting means,

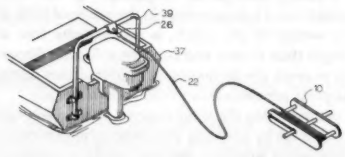
elevating means for providing tension to said spring, said elevating means being movable to a first position for applying rotative force via said spring under tension to said torque shaft which is movable to a first condition in which said upper feed roll is biased downwardly in said lower operative feeding position, said elevating means also being movable to a second position in which said spring is fully compressed and said torque shaft is moved to a second condition under which said bias on said upper feed roll is fully relaxed permitting said upper feed roll to be moved to said upper inoperative position by means of force transferred via said compressed spring to said lifting means.

4,278,212

WATER SKIING TOW APPARATUS

Ronald E. Wesley, 11364 Klinger, Hamtramck, Mich. 48212

Filed Dec. 13, 1976, Ser. No. 749,829
Int. Cl.[3] B65H *75/00, 75/06*
U.S. Cl. 242—54 R **1 Claim**



1. In combination with a water skiing tow apparatus of the type wherein a reel, adapted to be held by the two hands of a user, is rotatable about an axis during release of a towline wound onto said reel, the improvement wherein a boat hitch is attached to the end portion of the towline opposite said reel and said reel comprises a reel structure configured to provide a point of departure of the towline from said structure, such that, when a force is applied to the towline, the distance of the line of action of the force from said axis varies and passes approximately through said axis at least once per revolution of said reel, and a handle structure, aligned with said axis and non-rotatably affixed to said first mentioned structure, such that, each of the user's hands, during release of the towline, are disposed on opposite sides of said handle structure, whereby said hitch may be attached to the stern of a boat and the handle structure of said reel may be held by the two hands of a water skier for controlling the release of said towline.

4,278,213

CONTROL ARRANGEMENT FOR A ROLL CARRIER

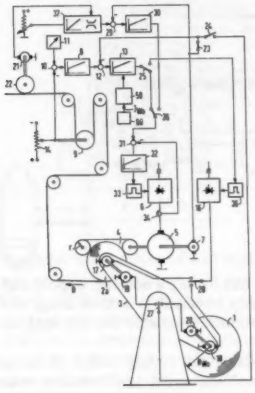
Manfred Rubruck, Igelsdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 139,752

Claims priority, application Fed. Rep. of Germany, May 13, 1979, 2917868

Int. Cl.[3] B65H *23/08, 25/22*

U.S. Cl. 242—75.1 5 Claims



1. In a control arrangement for rotating a roll held in a carrier and supplying a web under predetermined web tension, the roll being coupled to an electric driving and braking machine and the machine being coupled to a speed controller responding to optimized control valves continuously determined from system parameters, the improvement comprising:

means for generating a signal representing an initial value of the moment of inertia of a new roll during start-up of the new roll;

means for generating a signal representing the instantaneous radius of the roll at the point of unwinding of the web; and

means responsive to said signals for regulating at least one of the optimized control gain and the optimized integral-action time of the speed controller.

4,278,214

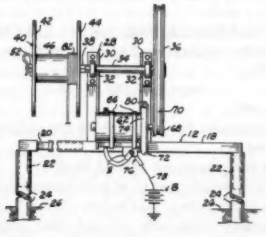
PORTABLE ELECTRIC WIRE REEL

Benton B. Caldwell, 405 Circle Dr., Fredrick, Okla. 73542

Filed Sep. 12, 1979, Ser. No. 74,630

Int. Cl.[3] B65H *75/40*

U.S. Cl. 242—106 8 Claims



1. A wire reeling device, comprising:

an inverted substantially U-shaped base having a horizontal elongated telescopically adjustable bight portion and having relatively short depending legs;

base support means having upwardly open sockets for receiving said base legs;

upstanding frame means mounted on said bight portion;

elongated shaft means journalled by said frame means parallel with the longitudinal axis of said bight portion;

a wire reel means releasably secured to said shaft means;

an electric motor having a drive shaft;

means connecting said motor with said frame for vertical pivoting movement about a horizontal axis toward and away from said shaft means; and,

belt and pulley means drivably connecting said motor with said shaft means.

4,278,215

WEBBING LOCK MECHANISM

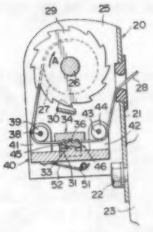
Junichi Nakaho, Ichinomiya, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki Seisakusho, both of Aichi, Japan

Filed Oct. 26, 1979, Ser. No. 88,360

Claims priority, application Japan, Mar. 27, 1979, 54-404661[U]

Int. Cl.[3] A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107.2 6 Claims



1. A webbing lock mechanism comprising:

a frame;

a wind-up shaft pivotably supported by said frame for winding up a webbing for restraining an occupant;

a fixed base fixed on the frame;

a lock lever pivotably supported by the frame to be pivotably moved by tensile force of the webbing exceeding a predetermined value in a direction of approaching the fixed base;

a window provided in said frame;

guiding portions provided in said window;

a lock member to be guided by said guiding portions of said window of the frame due to pivotal movement of the lock lever so as to approach the fixed base to clamp the webbing; and

approach limiting means provided at both sides of the fixed base and located at the end portion of the fixed base remote from the wind-up-shaft, said approach limiting means projecting toward the lock member for limiting a distance where the lock member approaches the fixed base nearly equal to the thickness of the webbing.

4,278,216

DOUBLE-SAFETY EMERGENCY LOCKING BELT RETRACTOR

Juichiro Takada, 3-12-1, Shinmachi Setagayaku, Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 107,132

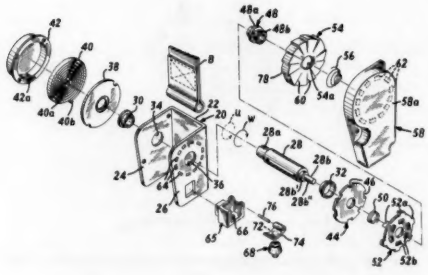
Claims priority, application Japan, Apr. 19, 1979, 54-47237; Jun. 27, 1979, 54-87040

Int. Cl.[3] A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107.4 A 13 Claims

1. An emergency locking belt retractor comprising a frame having spaced-apart side members; a belt reel mounted between the frame side members for rotation, and having a shaft

portion extending outwardly beyond one of the side members relative to the space between the frame members; a flange affixed on said shaft portion adjacent the side member and rotatable with the reel and having a multiplicity of circumferentially spaced-apart latch-receiving notches; a latch disc received on the shaft portion adjacent and outwardly of the flange, relative to the side frame member, for movement axially of the shaft portion toward and away from the flange and having a multiplicity of latch teeth extending inwardly through the flange latch-receiving notches; means on the said one side frame member defining locking shoulders corresponding to and selectively engageable by the latch teeth on the latch disc for selectively latching the reel to the side frame member by way of the reel flange when the latch disc is moved toward the reel flange; latch spring means for urging the latch disc axially away from the reel flange; an inertia wheel received on the shaft portion adjacent and outwardly of the latch disc, relative to the side frame member, for both rotation and axial movement on the shaft portion; cam means on the inertia wheel and latch disc for moving them axially of the shaft portion away from each other upon rotation of the latch disc in the belt unwinding direction relative to the inertia wheel; a member affixed to the retractor frame and having a wall portion adjacent and outwardly of the inertia wheel, relative to the frame; locking ratchet means on the inertia wheel and wall



portion selectively engageable upon outward axial movement of the inertia wheel by the cam means for preventing rotation of the inertia wheel in the direction of belt unwinding; an inertia wheel spring urging the inertia wheel in a direction away from the wall portion, whereby the latch spring and inertia wheel spring normally urge the latch disc and inertia wheel toward each other for conjoint rotation with the latch teeth out of engagement with the latch shoulders on the frame side member but upon rapid acceleration of the reel in the belt-unwinding direction the inertia wheel lags behind the latch disc and is cammed outwardly by the cam means and locked to the wall portion against rotation, whereupon the latch disc is cammed away from the inertia wheel toward the frame side member and the latch teeth lock to the latch shoulders on the frame side member to prevent further unwinding of the belt reel; a circumferential row of spaced-apart ratchet teeth on the inertia wheel having shoulders facing in the direction of belt unwinding rotation; pawl means selectively engageable with any one of the ratchet teeth; and inertia sensing means responsive to an abrupt change in the velocity of the retractor for engaging the pawl means with a ratchet tooth, whereby the inertia wheel ceases to rotate with the latch disc and reel and is cammed axially outwardly toward the wall portion, whereupon the latch disc is cammed toward the frame side member to engage the latch teeth with the latch shoulders and stop rotation of the reel in the belt unwinding direction.

4,278,217

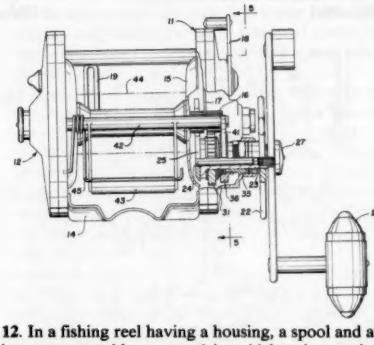
FISHING REEL WITH AUTOMATIC VARIABLE DRAG

Roy N. Blackwell, 5716 Monterrey, Fort Worth, Tex. 76112

Continuation-in-part of Ser. No. 965,682, Dec. 4, 1978, abandoned. This application Jul. 25, 1979, Ser. No. 60,592

Int. Cl.³ A01K *89/02*

U.S. Cl. 242—217 **19 Claims**



12. In a fishing reel having a housing, a spool and associated drive gear rotatably mounted in said housing, and a friction mechanism for producing variable friction drag on said drive gear;

means for detecting the reeling radius of the spooled line reeling on or off said spool; said detecting means comprising a follower arm pivotally mounted on said housing for engagement with the line reeling off or onto said spool; means urging said follower arm into engagement with said line, whereby said arm pivots in response to change in the reeling radius of said spooled line;

said friction mechanism including an extension assembly of a rotatable threaded member threadedly mounted on a rotatably fixed threaded member, said rotatable threaded member advancing and retracting axially to vary the friction drag applied to said drive gear;

means coupling said detecting means to said friction mechanism, to effect reduction of the friction applied to said drive gear in relation to a decrease in said reeling radius, and to effect increase of the friction applied to said drive gear in relation to an increase in said reeling radius;

and said coupling means coupling said follower arm to said rotatable threaded member, to effect rotation of said rotatable member in response to pivotal movement of said follower arm.

4,278,218

SEAL

Klaus-Jürgen Uhrner, Leingarten, Fed. Rep. of Germany, assignor to KACO GmbH & Co., Heilbronn, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,530

Claims priority, application Fed. Rep. of Germany, May 29, 1979, 2921669

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—40 **20 Claims**

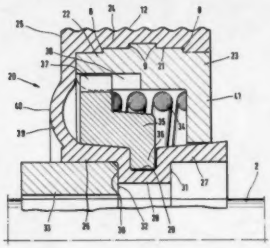
1. A seal, especially for dishwashers, for sealing a shaft, said seal comprising:

a slide ring for placement on said shaft;

an elastic bellows adapted to at least partially overlappingly engage said slide ring, said bellows being located substantially radially outwardly of said slide ring, and being provided with a radially outer wall portion extending substantially parallel to said shaft and having a radially outer peripheral surface and a radially inner peripheral surface, said peripheral surfaces extending approximately parallel to one another;

a support housing located radially inwardly of said outer wall portion of said bellows and being provided with a radially outer circumferential wall portion extending substantially parallel to said shaft and having a radially outer peripheral surface which is adapted to be at least partially overlappingly engaged by said inner peripheral surface of said outer wall portion of said bellows; and

a pressure spring for operation between said support housing and said slide ring, said outer peripheral surface of said



circumferential wall portion of said support housing, and said inner peripheral surface of said outer wall portion of said bellows, having a corresponding profiling, said profiling including support surfaces arranged on said circumferential wall portion transverse to the force of said pressure spring, and corresponding counter-surfaces arranged on said outer wall portion, said support surfaces and said countersurfaces being arranged in axial sequence for engagement with one another.

4,278,219

DEVICE FOR DETECTING HARD LANDINGS

Robert J. Finance, Toulouse, France, assignor to Etat Francais represented by the Delegue General pour l'Armement, Paris, France

Filed Feb. 12, 1979, Ser. No. 11,543
Claims priority, application France, Feb. 20, 1978, 78 04675
Int. Cl.[3] B64C *25/00*; G01P *15/04*
U.S. Cl. 244—100 R **7 Claims**

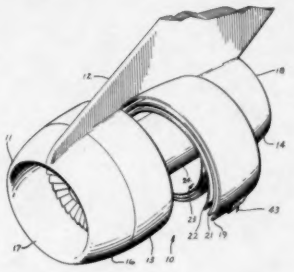
1. A device mounted on an aircraft landing gear for detecting hard landings of the aircraft, comprising detection means for indicating a hard landing and memorization means for storing a detected indication of a hard landing, whereby the detection means determines that an excessive vertical acceleration has been produced by the impact of the aircraft on the ground at the time of landing and is formed of a torsion pendulum comprising a rotary pendulum arm having a weight at one of its ends, its other end being attached to the aircraft landing gear by means of a swivel pin, and elastic means cooperating with the pendulum arm to produce a calibrated trigger threshold for the device, whereby said pendulum arm is biased by paid elastic means to a first position until a predetermined acceleration is effected, said pendulum arm then pivoting about said swivel pin in response to said predetermined acceleration, and whereby said memorization means retains said pendulum arm in a second position when a hard landing occurs.

4,278,220

THRUST REVERSER FOR A LONG DUCT FAN ENGINE

Everett A. Johnston, and Edward W. Ryan, both of Mason, Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 30, 1979, Ser. No. 25,301
Int. Cl.[3] B64C *25/68*; B64F *1/02*
U.S. Cl. 244—110 B **18 Claims**



1. An improved fan engine thrust reverser of the type having a nacelle outer cowl, a translatable cowl sleeve, a fixed cascade, and a fan duct blocker door wherein the improvement comprises:

(a) means for movably positioning the cowl sleeve and the blocker door in their stowed positions between two axially spaced fixed cowl sections;

(b) linkage means located entirely within the nacelle outer cowl for moving the cowl sleeve and the blocker door from their stowed positions to their thrust-reversing positions; and

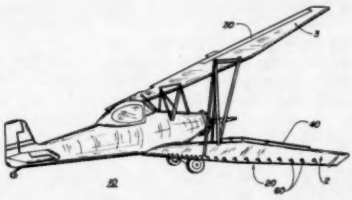
(c) said positioning and linkage means includes a drive link having a pair of opposing ends, one of the opposing ends being coupled to the blocker door, means attached to and translatable with the cowl sleeve for exerting a rearward force on said drive link, said rearward force exerting means including a unison ring attached to the other end of said drive link and engageable by a bumper extending from the cowl sleeve.

4,278,221

AGRICULTURE SPRAY PLANE

Weldon D. Wilson, Boise, Id., assignor to Eagle Aircraft Co., Boise, Id.

Filed Nov. 19, 1979, Ser. No. 95,778
Int. Cl.[3] B64D *1/18*
U.S. Cl. 244—136 **7 Claims**



1. An improved agricultural spray plane of the biplane type wherein the improvement comprises:

a pair of spray booms, each boom mounted on each of the

lower wings defining a continuous trailing edge of each of the lower wings for substantially the length of each wing;
at least one spoiler mounted on the upper surface of each lower wing forward of said spray booms;
at least one aileron mounted on each of the upper wings; and
means for simultaneously controlling ailerons and spoilers located on wings on opposing sides of the plane.

4,278,222
MUSICAL INSTRUMENT STAND
Alan G. Siegel, 7811 N. Fairchild Rd., Milwaukee, Wis. 53217
Filed Apr. 6, 1979, Ser. No. 27,861
Int. Cl.³ F16L *3/00*
U.S. Cl. 248—121 **9 Claims**

1. A stand for musical instruments, comprising:
an inner shaft,
said inner shaft having internal threads on its upper end and having an external diameter less than the internal diameter of a first hollow musical instrument, and having a hollow interior portion,
and outer hollow tubular shaft,
said outer shaft telescopically receiving said inner shaft and having external threads on its upper end,
a clutch collar at the upper end of said outer shaft and with internal threads that mate with said external threads of said outer shaft,
said clutch collar being adapted, upon tightening thereupon, to grip said inner shaft to a preselected adjustable region along its length, to firmly set the height of said inner shaft, and
said clutch collar including an upper annular surface for supporting one end of said first hollow musical instrument, and
a top member, including an elongated extension protruding upward from said inner shaft, said extension having a diameter sized to fit within said hollow interior portion of said inner shaft and less than the internal diameter of said second hollow musical instrument,
in the region of union of said inner shaft and said extension there being an upwardly exposed portion enlarged relative to said extension, said enlarged portion having an annular surface for supporting one end of said second hollow musical instrument, and
means at the lower end of said outer shaft for connecting said outer shaft to a base,
whereby, when playing said first and second hollow musical instrument,
said second instrument can be supported on said elongated extension and annular surface of said enlarged portion while said first instrument is played
said first instrument can be supported on the protruding end of said inner shaft and said annular surface of said collar while said second instrument is played,
said elongated extension of said top member has a diameter less than the internal diameter of said inner shaft and the interior of said innershaft is shaped to receive said elongated extension and
the interior of said outer shaft can telescopically receive substantially all of said inner shaft,
whereby, for compact storage,
said top member can be stored inside said inner shaft and
said inner shaft containing said top member can be stored inside said outershaft by releasing said collar and telescopically sliding said inner shaft inside said outer shaft.

4,278,223
SELF SUPPORTING STAND FOR HAND HELD HAIR DRIER
Denis J. Fauteux, No. 8426 Riverside Dr. E., Windsor, Ontario, Canada (N8S 1E9)
Filed Aug. 10, 1979, Ser. No. 65,639
Int. Cl.³ A47G *29/00;* **A45D** *20/04*
U.S. Cl. 248—125 **1 Claim**

1. An upright stand for removably attaching a normally hand-held hair drier to the top thereof, for the purpose of freeing a person's hands for various other cosmetic purposes, while drying the hair, comprising in combination, a somewhat heavy circular base, from the center of which extends upwardly a long tube containing therein a smooth sliding round rod, for the purpose of extending or reducing the height of said stand; means for holding said stand to a required height, comprising several springs located within, and near the bottom of said rod, said springs being in compression, and the ends of which press against the interior of said tube; and means for attaching the said hand-held hair drier to the top of said round rod, comprising a bow-shaped yoke the base of which is centrally and permanently attached to the top of said rod; each of the two vertical arms of the yoke having a threaded bolt passing therethrough, said bolts being on the same centerline; a knurled knob attached to the outer end of each of said bolts, for manually rotating them; and a concave plate attached to the inner end of each of said bolts for partly enclosing the body of the hand-held hair drier firmly between them, said concave plates being free to rotate upon the ends of said bolts.

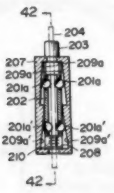
4,278,224
WEDGING ACTION FIXTURE
Hideo Arakawa, Tokyo, Japan, assignor to Arakawa, Co. Ltd., Japan
Filed Jun. 26, 1978, Ser. No. 918,949
Claims priority, application Japan, Jun. 30, 1977, 52-78250; Sep. 24, 1977, 52-115007; Dec. 29, 1977, 52-159022
Int. Cl.³ A47G *29/02*
U.S. Cl. 248—246 **8 Claims**

1. Apparatus capable of being fixed by wedging action to an elongated support member at a desired position thereof and for receiving and supporting at said fixed position an external force applied in a direction substantially parallel to the longitudinal axis of said elongated support member, said apparatus comprising:
external force receiving means for receiving said external force;
wedging action means adapted to receive said external force transmitted through said external force receiving means

and for effecting by said external force a wedging action, said wedging action means including a wedging action member for generating a pair of wedging forces substantially in a perpendicular direction to said longitudinal axis of said elongated support member and wedging force receiving member having wedging force receiving surface for receiving said pair of wedging forces from said wedging action member;

biasing means adapted to engage said wedging action means and for exerting a biasing force thereon to normally keep said wedging action member in contact with said wedging force receiving surface of said wedging force receiving member;

holding means for holding said elongated support member, said holding means including a pair of first and second pressing members, each being adapted to receive a respective one of said pair of wedging forces and for exerting on



said elongated support member a pair of pressing forces having the same directions and opposite orientations with respect to each other;

wedging force transmitting means adapted to receive said pair of wedging forces and for transmitting the same to said holding means;

wedging action releasing means adapted to receive an external releasing force and for effecting a release of said wedging action of said wedging action means

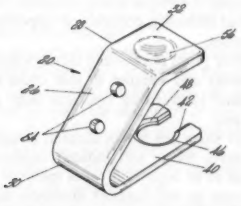
wherein said wedging action member includes a casing having formed therein at least one pair of interior opposed surfaces which taper towards each other in the longitudinal direction and adapted to make contact with said wedging force receiving member, said casing having a longitudinally extending open side formed between said tapered surfaces receiving therethrough said elongated support member so that a longitudinally extending portion thereof is located between said first and second pressing members.

4,278,225

INCLINED VIAL HOLDER

Dennis B. Phelps, 4517 Vieja Dr., Santa Barbara, Calif. 93110

Filed Sep. 4, 1979, Ser. No. 72,015
Int. Cl.[3] A47K *1/08*
U.S. Cl. 248—311.3 **16 Claims**



1. A holder for supporting a vial having a top, neck, shoulder and bottom and which has a fluid therein, said vial being held in an inverted position with the top thereof being held at an inclined angle, said holder comprising

a vertical backplate having a top edge and a bottom edge and being adapted to be fastened to a vertical supporting surface;

a relatively flat top support fastened to the top of said vertical backplate and extending therefrom at a predetermined acute angle, as measured from a horizontal plane normal to the intersection of the top edge of the vertical backplate and the relatively flat top support, said flat top support having a length which is greater than the width of a vial to be supported thereby;

a relatively flat bottom support fastened to the bottom edge of said vertical backplate and extending therefrom at substantially said acute angle from a horizontal plane normal to the intersection of the vertical backplate and relatively flat botton support, said flat bottom support having a length which extends from the intersection of the flat bottom support with the edge of the vertical backplate to an outer edge located at the intersection of the flat bottom support with a plane which is normal to the end of the flat top support, said flat bottom support having an elongated slot with a width adapted to receive a neck of a said vial and which extends from the outer edge of the flat bottom support to substantially the center of the planar flat bottom support, said flat bottom support having an aperture which extends through the flat bottom surface and which has the center thereof in alignment with the center of the planar flat top support and a diameter which is slightly greater than the diameter of a top of a said vial adapted to be supported thereby, said aperture communicating with the elongated slot to enable a top of a vial to be passed through the aperture wherein a top of a said vial is adapted to extend therethrough and be freely supported at said acute angle beyond the surface of the flat bottom support, said flat bottom surface having means defining inwardly sloping walls around the periphery of the apertures and elongated slot on the side of the flat bottom support adjacent the flat top support;

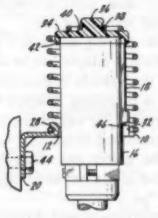
said flat top support and said flat bottom support being adapted to removably receive a vial inserted therebetween in an inverted position with a said neck of a said vial being first positioned in the elongated slot and urged toward the vertical backplate until a said neck of a said vial communicates with said aperture whereupon the flat top support and flat bottom surface cooperate to a clamping force between a said bottom and a shoulder of a said vial to hold a said vial in a fixed inclined angle with a top of a said vial freely extending therefrom and adapted to have a user insert a syringe therein to remove fluid from said vial being held in an inclined angle.

4,278,226

ELECTRICAL CONNECTOR MOUNTING BRACKET

Charles Horowitz, Niles, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Aug. 6, 1979, Ser. No. 63,680
Int. Cl.[3] A47F *5/00*
U.S. Cl. 248—314 **6 Claims**



1. In a holder for an electrical connector having a cylindrical body and an axially-extending key on the exterior thereof, a bracket for use in attaching the holder to a support, an opening

in said bracket of a size and shape to receive the cylindrical body and key, a coil spring attached to said bracket and coaxially aligned with said opening, a cap held by said coiled spring and positioned to cover the end of an inserted electrical connector cylindrical body, and locking means on said bracket cooperating with said key to hold an electrical connector cylindrical body within the holder.

4,278,227

VEHICLE REAR-VIEW MIRRORS

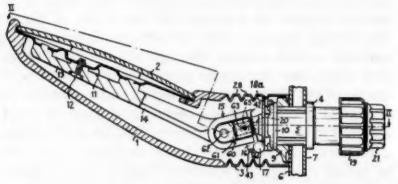
Kenneth P. Davis, Harlington, and Charles A. Boughtflower, Bourne End, both of England, assignors to Magnatex Limited, Middlesex, England

Filed Aug. 2, 1978, Ser. No. 930,311

Claims priority, application United Kingdom, Sep. 20, 1977, 39037/77

Int. Cl.³ B60R *1/02*

U.S. Cl. 248—487 **8 Claims**



1. A vehicle rear view mirror assembly comprising in combination:

(a) a mirror having a backing member,

(b) a protective mirror shroud of a resilient and flexible material comprising,

(i) a rim portion in which the mirror is fitted,

(ii) a body portion which extends from the rim portion with which it is integral and covers the back of the mirror, said body portion having an outer surface which extends continuously over the mirror backing member, and

(iii) a part which projects beyond the mirror edge and defines an opening therein,

(c) a tubular extension gaiter of flexible material of bellows-like construction which is continuous with the said part of said shroud and which has a free end,

(d) a mirror support arm assembly, and

(e) a mounting part carrying the mirror support arm assembly and adapted to be secured to the bodywork of the vehicle,

(f) said mirror support arm assembly extending through the opening in the said part of said shroud and through said extension gaiter and comprising

(i) a mirror support arm which is fixed at its end region to the backing member inside the shroud, and

(ii) at least one movable joint connecting said mirror support arm to said mounting part,

(g) said gaiter extension having at its free end an inwardly extending flange which is adapted to be clamped between the outer surface of the vehicle bodywork and the mounting part and which is in sealing relation with at least one of the mounting part and the vehicle bodywork when the mirror assembly is mounted thereon,

(h) the material of the gaiter extension having a thinner cross-section than that of the rim and body portions of said shroud, and

(i) said rim and body portions of said shroud having a predetermined rigidity which enables both said rim and body portions to move together with the mirror when the mirror support arm moves about said at least one movable joint yet permits the material of said shroud to yield resiliently when hitting, and being hit by, an object.

4,278,228

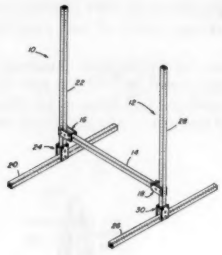
COLLAPSIBLE SUPPORT STRUCTURES

Hugo E. Rebentisch, Garden City, and Thomas Tuday, Dearborn, both of Mich., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 12, 1980, Ser. No. 148,886

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—548 **20 Claims**



1. A support structure comprising:

a first collapsible assembly and a second collapsible assembly, each comprising

an elongated base member,

an elongated support member having a hole therethrough proximate one end, and

a support connector fixture for connecting said support member to said base member, said support connector fixture including

a support connector frame coupled to said base member and including portions on opposite sides of said support member,

a support pivot pin passing through said hole in said support member and secured to said support connector frame portions on opposite sides of said support member, and

support shear pin means secured to said support connector frame and located adjacent said support member so as to hold said support member in a vertical orientation and prevent rotation of said support member about said support pivot pin in either direction, said first and second collapsible assemblies being spaced apart and aligned so that the base members of said first and second collapsible assemblies are substantially parallel;

an elongated cross member having a hole therethrough proximate each end; and

first and second cross member connector fixtures for coupling the ends of said cross member to said support members of said first and second collapsible assemblies, respectively, each of said cross member connector fixtures comprising

a cross member connector frame coupled to said support member and including portions on opposite sides of said cross member,

a cross member pivot pin passing through said hole in said cross member and secured to said cross member connector frame portions on opposite sides of said cross member, and

cross member shear pin means secured to said cross member connector frame and located adjacent said cross member so as to hold said cross member substantially perpendicular to said support members and to prevent rotation of said cross member about the cross member pivot pins in either direction,

whereby the application to said support members of an impact having a component perpendicular to a plane defined by said first and second support members, sufficient to fracture said support shear pin means, causes said

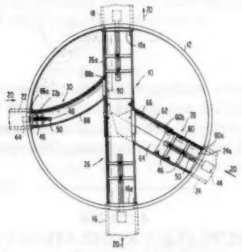
support members to rotate about said support pivot pins away from said impact to a horizontal position, and whereby the application to said support members of an impact having a component parallel to the plane defined by said first and second support members, sufficient to fracture said cross member shear pin means, causes said cross member to rotate about said cross member pivot pins thereby causing said first and second collapsible assemblies to rotate about said base members to a horizontal position.

4,278,229

FULL HEIGHT SEWER SYSTEM MANHOLE INVERT FORM ASSEMBLY WITH ANGULARLY ADJUSTABLE INTERSECTING FLOW PATH

Frederick E. Burlett, Benson, Vt.

Filed Jul. 11, 1979, Ser. No. 56,673
Int. Cl.[3] B28B 7/02
U.S. Cl. 249—11 8 Claims



1. An improved, full pipe height manhole invert form assembly for creating an open top, troughlike flow path formed of poured concrete between at least an inlet and an outlet pipe within a manhole, said invert form assembly comprising:

a straight through primary flow invert form for connecting diametrically opposed axially aligned inlet and outlet pipes opening to the interior of the manhole,

said form comprising telescoping, U-shaped, upwardly open, slidable invert form sections having a height and width approximately equal to the diameter of the aligned inlet and outlet pipes,

means for locking the slidable sections in positions such that the opposite ends of the form abut projecting ends of the opposed inlet and outlet pipes,

laterally opposed invert side tabs fixed to the ends of respective sections and projecting beyond the ends thereof and being received within the interior of respective inlet and outlet pipes, and invert bottom tabs fixed to the interior of the sections at their ends and having a portion projecting longitudinally thereof beyond the edge of said sections and contacting the interior of the pipes at their bottoms, respectively, so as to center the invert form with respect to said aligned pipes, and

a longitudinally adjustable slide guide mounted at respective ends of said invert form at the top thereof and bearing a retainer tab centered transversely of said invert form section and projectable interiorly of said pipes to contact the inner surface of the pipes at the top thereof to prevent lifting of the invert form during pouring of the concrete to form U-shaped trough flow paths between said pipes upon hardening of the concrete, and

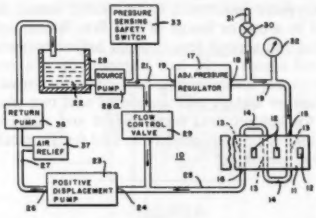
wherein said means for supporting said slide guide at respective ends of said straight through invert form comprises laterally extending, spaced struts, said slide guide being slotted longitudinally, bolts projecting through said struts and being received within said slots, nuts threadably carried by said bolts, whereby, upon loosening of said nuts, said slide guide may be slid longitudinally to project said retainer tab at a variable distance into the open end of pipe in contact therewith, whereupon said nuts can be tightened down to lock said retainer tab at a given distance from said struts.

4,278,230

COOLING SYSTEM FOR PLASTIC MOLDS

Paul E. Allen, Newtown, Conn., assignor to Logic Devices, Inc., Bethel, Conn.

Continuation-in-part of Ser. No. 671,043, Mar. 29, 1976, abandoned. This application Oct. 19, 1976, Ser. No. 733,812
Int. Cl.[3] B22D 27/04; F28F 11/00
U.S. Cl. 249—81 4 Claims



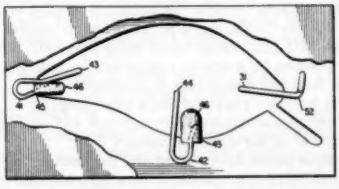
1. A system for controlling the flow of cooling liquid in a cooling duct of a plastic mold having a feed port and an exit port comprising a source of cooling liquid, inlet piping means adapted to be connected to the feed port, pressure reducing means connected between the source and the inlet piping means for providing cooling liquid through the inlet piping means at the feed port at a pressure no more than essentially atmospheric, discharge piping means adapted to be connected to the exit port for receiving fluid flowing through the cooling duct, means for receiving cooling fluid and a positive displacement pump means having an inlet connected to the discharge piping means for providing a negative pressure at the exit port and an outlet connected to the means for receiving cooling fluid from the outlet, said pressure reducing means and said pump means having a maximum capacity for fluid flow greater than the desired flow of cooling liquid through the mold whereby the cooling duct of the mold basically determines the quantity of cooling fluid that flows therethrough and in which the system includes minimum flow means connected between the source and the pump means for providing to the pump means at least a constant minimum quantity of cooling liquid.

4,278,231

MOLD FOR FABRICATING FISHING LURES ETC.

Welbourne D. McGahee, Melbourne, Fla., assignor to Loop-A-Line, Inc., Melbourne, Fla.

Division of Ser. No. 905,738, May 16, 1978, Pat. No. 4,228,611, which is a division of Ser. No. 760,927, Jan. 21, 1977. This application Jul. 23, 1979, Ser. No. 59,951
Int. Cl.[3] B29C 6/00; B29F 1/00
U.S. Cl. 249—95 2 Claims



1. An injection molding die for fabricating a molded fishing lure having a hook hanger with a first end segment secured

within the molded lure, a center segment external to the lure and a second end segment within a bore in the lure body, comprising:

a first female mold half incorporating a channel adapted to receive said center segment of said hook hanger and said first mold half further incorporating a recess for receiving a two piece removable male mold;

a two piece removable male mold, having a mirror image facing side of each piece including a groove dimensioned to form a channel therebetween to encompass said second end segment of said hook hanger and thereby hold said hook hanger in position during molding operations and provide a void about said second end segment in the finished molded product;

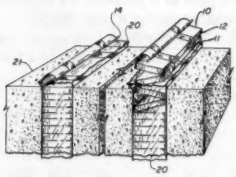
said two piece male mold parting along the longitudinal axis of said second end segment of said hook hanger held by said two piece male mold; and a second female mold half formed as a mirror image of said first female mold half, said first and second female mold halves cooperating so that said female mold half channels form a receptacle therebetween for receiving said center segment of said hook hanger and an end section of said two piece male mold, for holding said hook hanger and said two piece male mold in position relative to said female mold during molding operations.

4,278,232

REMOVABLE SEISMIC GAP FILLER

Gustav Szabo, c/o Progress Unlimited, 200 Madison Ave., New York, N.Y. 10016

Filed Feb. 22, 1980, Ser. No. 123,511
Int. Cl.³ B28B *7/30*
U.S. Cl. 249—183 **12 Claims**



1. A removable seismic gap or expansion joint filler, comprising a continuous strip, said strip being adapted to form a zig-zag filler in poured concrete that is easy to remove from the seismic gap, or joint after the poured concrete sets.

4,278,233

ARRANGEMENT FOR ACTUATING GAS-CHANGE VALVES

Hansjürgen Zürner, Ammerndorf, and Wolfgang Fuhrmann, Nürnberg, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nürnbert, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,321
Int. Cl.³ F16K *31/122*; F01L *1/04*
U.S. Cl. 251—57 **7 Claims**

1. A hydraulic system for actuating a gas-change valve, especially gas-change valve for combustion engines and compressors, said gas-change valve being inherently urged to its closed position by a spring, said system including a source of control fluid and comprising in combination:

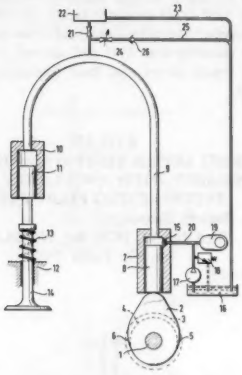
a cam having a pre-ramp and a post-ramp;

an input piston actuatable by said cam and operatively connectible to the source of control fluid;

an output piston for opening said gas-change valve;

conduit means for communication between said output piston and said input piston relative to each other and relative to said source of control fluid; and

infinitely adjustable throttle means as well as a permanent venting means operatively connected to said conduit means for controlling the quantity of said control fluid during operation of said system free of oscillations; and



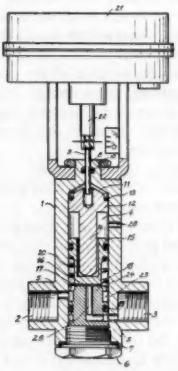
said permanent venting means being operatively connected to said conduit means at the highest point thereof and also to said source of control fluid said infinitely adjustable throttle means directly adjusting the specific lift of the gas-change valve.

4,278,234

MINUTE FLOW REGULATING VALVE

Hans D. Baumann, 35 Mirona Rd., Portsmouth, N.H. 03801

Filed May 5, 1980, Ser. No. 146,630
Int. Cl.³ F16K *31/12*
U.S. Cl. 251—57 **3 Claims**



1. Apparatus for controllably restricting the flow of fluid therethrough which comprises:

(a) a housing having inlet and outlet ports, a longitudinal bore having a terminating end wall portion and at least one additional port opening connecting externally with said longitudinal bore;

(b) means for creating a frictional flow path located within said longitudinal bore having opposed parallel and engaging flat surfaces having outer peripheries spaced interior of said longitudinal bore, and consisting of a pair of piston type elements, one of said piston type elements being fixed and the other of said piston type elements being slidable within the longitudinal bore for engaging said longitudinal housing bore and where at least one of these piston like elements has sealing means disposed at its outer cylindri-

cal periphery, said sealing means being slidingly engaged within said bore, the space between the sliding piston type element and the terminating end wall portion retains hydraulic fluid therein;

(c) a deformable element interspaced between said means for creating a frictional flow path;

(d) a central bore penetrating at least one of the flat surfaces of said means to provide fluid access to either the inlet or the outlet port of said housing;

(e) means for conducting fluid from either the inlet port or the outlet port to the outer periphery of said flat surfaces;

(f) hydraulic means to effectively position at least one of said slidingly engaged means for creating a frictional flow path within said longitudinal bore in respect to its opposite member, said hydraulic means includes an external actuating device having a stem-like extension penetrating slidably into said hydraulic fluid filled space to allow volumetric displacement of the hydraulic fluid to in turn oppose the force of the deformable element to affect the distance between the opposed parallel and engaging flat surfaces, wherein the cross-sectional area of said stem-like extension is significantly smaller than the cross-sectional area of said sliding piston type element.

4,278,235

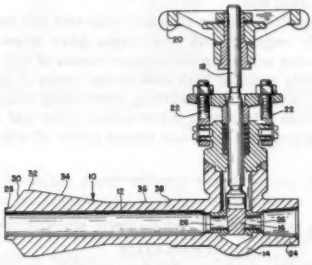
MALE ENDED VALVE

Peter W. Smith, 204 Engle St., Tenafly, N.J. 07670

Continuation-in-part of Ser. No. 907,710, May 19, 1978, abandoned. This application Jan. 7, 1980, Ser. No. 109,828

Int. Cl.³ F16K *51/00*

U.S. Cl. 251—144 **1 Claim**



1. In a valve having a one piece valve body consisting of a main housing section defining a valve chamber and supporting a valve bonnet, with male and female members extending longitudinally in opposite directions from the housing section, said male and female members being provided with axial bores communicating with the valve chamber, and the male member being adapted to be butt welded to a support surface with its bore in communication with an opening in said surface, the improvement comprising:

a cylindrical axially protruding centering ring at the distal end of said male member, said centering ring being adapted to enter into the opening in the support surface and to cooperate therewith in locating the valve,

said male member having a first portion with a truncated conical outer surface leading from said centering ring to a second portion having an outer diameter greater than the outer diameter of said centering ring, said second portion in turn being connected by a third portion having a truncated conical outer surface to a fourth portion, said fourth portion being joined to said housing section and having a maximum outer diameter smaller than that of said second portion,

the bore extending through the centering ring and at least said first, second and third portions having a uniform diameter, the circle defining the intersection between said centering ring and said first portion being spaced from said support surface with said centering ring being at least partially within said surface opening, when said centering ring is butt welded to said support surface.

4,278,236

SLIDE VALVE FOR PIPELINES

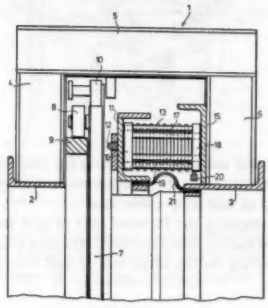
Hans-Jurgen Janich, Regelkamp 12, 4720 Beckum, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,622

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813655

Int. Cl.³ F16K *25/00*

U.S. Cl. 251—159 **2 Claims**



1. A slide valve for gas pipelines comprising an upstream and a downsteam pipeline section, said sections being spaced apart and rigidly connected by stays, a valve plate that is movable into a valve-closing position between said sections, and a floating annular sealing member connected to the upstream section by a flexible sleeve-like seal, wherein the improvement comprises a plurality of springs which are distributed around the annular sealing member and which act between the upstream section and the annular sealing member, and a plurality of pressure-medium actuated bellows which are distributed around the annular sealing member and are separate from the springs, each bellows having one end connected to the upstream section and having its other end more remote from the annular sealing member and connected to the annular sealing member by at least one pull-rod, both the valve plate and the downstream section having an annular seating surface for sealing engagement with the annular sealing member, and both the bellows and the springs having a stroke sufficient so that the bellows, when actuated by the pressure medium, move the annular sealing member clear of the valve plate, and so that when the valve plate is then removed from between the sections and the pressure in the bellows is relieved, the springs move the annular sealing member into sealing engagement with the annular seating surface on the downstream section.

4,278,237

APPARATUS AND METHOD OF THREADING A CLOSED FRAMED OPENING BY HELICOPTERS

Fred S. Bergman, Delta, and Reginald P. Radelet, Maple Ridge, both of Canada, assignors to Lindsey Manufacturing Co., Azusa, Calif.

Filed Nov. 29, 1979, Ser. No. 98,382

Int. Cl.³ B66D *1/36*

U.S. Cl. 254—134.3 PA **30 Claims**

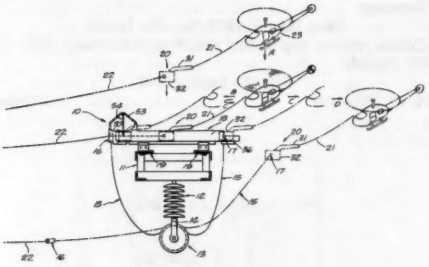
1. That improved method of inserting a loop cable between the two halves of a coupling in a main cable being towed by an aircraft comprising:

providing a loop cable equipped with a male and a female coupling means on a respective end thereof;

supporting said male and female coupling means in spaced

apart relation on the opposite sides of means for uncoupling said main cable coupling;

advancing said main cable coupling to a position between said male and female coupling means and then uncoupling said main cable coupling by retrograde movement thereof against said uncoupling means, thereby releasing the rear



part of said main cable coupling for rearward movement into automatic coupling engagement with the coupling at one end of said loop cable; and

thereafter moving the forward part of said main cable coupling forwardly into automatic coupling engagement with the coupling on the other end of said loop cable.

4,278,238

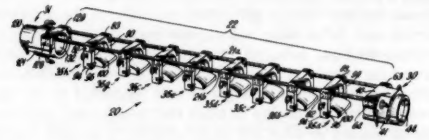
CABLE FEEDING TOOL

Andrija Vugrek, Madison, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,839

Int. Cl.³ B05C *3/02*; G01F *11/02*; B65H *59/00*

U.S. Cl. 254—134.3 FT **5 Claims**



1. A cable feeding tool comprising, a pair of horizontally spaced wire rope lengths grouped together to constitute part of a horizontally elongated support frame resiliently warpable in the vertical plane into arcuate shapes, cable receiving and cable discharging sleeve units disposed mostly beneath and at opposite ends of said lengths in coupled relation with said lengths to be supported thereby and to form part of said frame, and a plurality of collar units disposed mostly beneath said lengths between said sleeve units in spaced relation therefrom and from each other and in coupled relation with said lengths to be supported thereby and to form part of said frame, said sleeve units and collar units having respective longitudinal passages therein for movement of a cable through said passages.

4,278,239

VEHICLE WINCH

Gunnar S. S. Peterson, Vansbro, Sweden, assignor to Sepson Aktiebolag, Vansbro, Sweden

Filed Feb. 2, 1979, Ser. No. 8,938

Claims priority, application Sweden, Feb. 15, 1978, 7801765

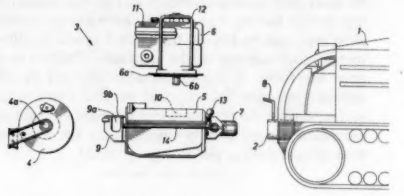
Int. Cl.³ B66D *1/00*

U.S. Cl. 254—323 **5 Claims**

1. A vehicle mountable winch that is readily separable into three main units for ease in manually moving said units individually and subsequent reassembly in relocating said winch comprising:

a line drum provided with support means for rotatably supporting said drum incident winding of a line on or off said drum;

a driving unit provided with a laterally extending mounting part of an attachment device to enable mounting said winch on a vehicle and having carrier means detachably cooperable with said support means of said drum to fixedly mount said drum on said driving unit, said driving unit defining an upwardly facing motor support surface and having therewithin detachably engagable upwardly opening input driven means and output drive means;



a motor having rotatable output shaft means drivingly cooperating with and extending downwardly into said input driven means within said driving unit, said motor being detachably mounted on said support surface of said driving unit to bear on the upper surface of said driving unit and transmit driving power from said motor into said driving unit; and

drive transmitting means rotatable with said line drum and drivingly engaged with said output drive means within said driving unit when said support means of said drum is cooperably attached with said carrier means of said driving unit, said drive transmitting means being easily disengaged from said output drive means when said support means is detached from said carrier means of said driving unit.

4,278,240

POWDER INJECTION APPARATUS WITH SIEVING APPARATUS

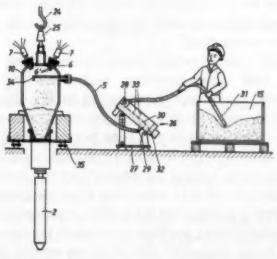
Ake Archenholtz, Vesteras, Sweden, assignor to Asea Aktiebolag, Vesteras, Sweden

Filed Aug. 16, 1979, Ser. No. 67,020

Claims priority, application Sweden, Aug. 22, 1978, 7808832

Int. Cl.³ C21C *7/00*

U.S. Cl. 266—216 **7 Claims**



1. Apparatus for injection of powder into a metal melt, comprising a charging container; an injection device for injecting powder into said charging container; a storage container for powder; at least one filling pipe for transporting powder from said storage container to said charging container, at least

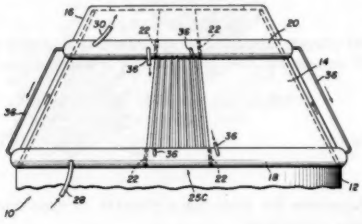
one sieve for separation of grains of an undesirable grain size and for transporting grains of a desired grain size from said storage container; a lance; an ejector device for providing said lance with pressurized gas; and a throttle valve for feeding powder from said charging container through said lance to said metal melt.

7. Apparatus for injection of powder into a metal melt, comprising, a charging container; an injection device for injecting powder into said charging container for subsequent injection into said metal melt; a storage container for powder; at least one filling pipe for transporting powder from said storage container to said charging container; at least one sieve for separation of grains of an undesirable grain size, suction pump means transporting powder through said sieve and forwarding grains of a desired grain size from said storage container to said charging container through said at least one filling pipe, said charging container being connected to a lance device for feeding powder to the melt.

4,278,241
TOP CONE COOLING SYSTEM FOR BASIC OXYGEN FURNACE

Fahim E. Shadid, Downers Grove, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Jul. 18, 1980, Ser. No. 169,978
Int. Cl.³ C21C *5/42*
U.S. Cl. 266—241 **11 Claims**



1. In a molten metal refining vessel having an internally insulated metal shell, said shell having a bottom, wall and top conical portion, the improvement comprising:

a plurality of cooling liquid metal walled heat-exchange passages, adjacent the top conical portion exterior surface, substantially aligned like element lines of a conical surface;

means to supply a cooling liquid so that it flows upwardly in all of the passages; and

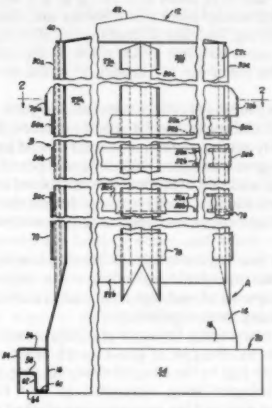
means to withdraw cooling liquid, from the upper end of all the passages, away from the surface which is being cooled.

4,278,242
BELL-TYPE COIL ANNEALING FURNACE INNER COVER

William P. Freund, Lakewood, and Stephen R. Hulvey, Medina, both of Ohio, assignors to The Alloy Engineering Company, Berea, Ohio

Filed Feb. 11, 1980, Ser. No. 120,655
Int. Cl.³ C21D *1/12, 9/00*
U.S. Cl. 266—263 **5 Claims**

1. A heat resistant stainless steel or alloy inner cover for a bell-type metal processing furnace comprising a generally cylindrical tubular body section including a plurality of circumferentially spaced longitudinally extending parallel angle iron members each extending the length of the generally cylindrical tubular body section and having their apexes orientated towards the center of the generally cylindrical tubular body section and a panel between each circumferentially spaced pair of angle iron members extending the length of the generally cylindrical tubular body section and connected to the flanges of the angle iron members at about their longitudinally extending centers, a member integral with and closing one end of said generally cylindrical tubular body section, and a plurality of

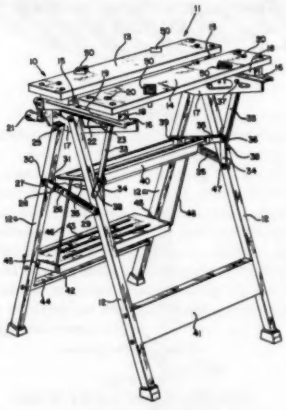


metal bands spaced lengthwise of and surrounding said generally cylindrical tubular body section and welded to the free edges of the flanges of said angle iron members.

4,278,243
FOLDABLE WORKBENCH

Lorenzo E. Alessio, Cairoli, Italy, assignor to Black & Decker Inc., Newark, Del.

Division of Ser. No. 765,296, Feb. 3, 1977, Pat. No. 4,155,386.
This application Mar. 7, 1979, Ser. No. 18,384
Claims priority, application Italy, Feb. 19, 1976, 20341 A/76
Int. Cl.³ B25B *1/10*
U.S. Cl. 269—16 **17 Claims**



1. A foldable workbench comprising:

an integral clamping vise defining a top workbench surface; and

a support structure for supporting the vise, the support structure including a pair of mutually spaced leg assemblies, each of said leg assemblies including:

first and second legs pivotally connected to said clamping vise so as to be pivotally movable from a collapsed position wherein the workbench is in a folded condition to an open position wherein said legs diverge from one

another in a downward direction and the workbench is in the erected condition;

said first and second legs being pivotally connected to said clamping vise at first and second pivot axes, respectively; said first pivot axis being at a lower elevation than said second pivot axis whereby said clamping vise, said first leg, and said second leg are all juxtaposed one to the other to form a flat stack of mutually parallel elements when the workbench is in the folded condition;

articulating means pivotally connected to each of said legs and said clamping vise for coacting therewith to simultaneously articulate the movement of said legs and said clamping vise between said collapsed position wherein said legs and said clamping vise are folded to form said flat stack and said open position wherein the outer ends of said legs are spread apart a predetermined distance; and

means for bracing the integral clamping vise with respect to at least one of said legs while at the same time limiting the spread of said legs to a predetermined distance;

said articulating means including:

a set of articulating linkages pivotally interconnecting, respectively, the pair of legs to each other and at least one of the legs to the integral clamping vise, said articulating linkages being connected so that the integral clamping vise and leg structures are stacked in juxtaposition to each other when the workbench is in its folded position and, so that the other ends of the legs are spread apart from each other with the integral clamping vise substantially transverse to the leg structures when the workbench is in the erected position;

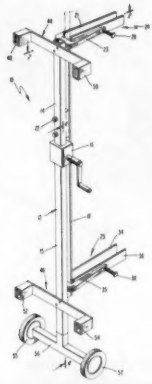
said bracing means including structure means extending from one of said linkages and configured for engaging one of said legs in said erected position thereby limiting the spread of said legs to said predetermined distance.

4,278,244

PIVOTABLE DOLLY FOR HOLDING TRANSPORTING AND HANGING A DOOR

Charles E. Carter, 921 Beach Rd., Hampton, Va. 23664

Filed Oct. 22, 1979, Ser. No. 87,436
Int. Cl.³ B25H *1/08*
U.S. Cl. 269—17 **11 Claims**



1. A pivotable dolly for securedly holding a heavy rectangular member by one edge comprising:

an elongated member;

means fixed to said elongated member for releasably holding the rectangular member with the held edge of the rectangular member substantially parallel to said elongated member;

roller means attached to one end of said elongated member for permitting the rolling of the dolly and the pivoting of the elongated member between horizontal and vertical positions, said elongated member holding the lower surface of the rectangular member at a selected level when said elongated member is in a vertical position; and

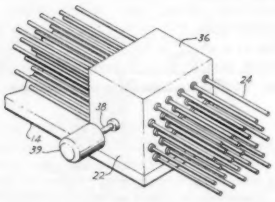
means for steadily supporting said elongated member when said elongated member is in the horizontal position, said means including a first handle secured to said elongated member, said first handle including portions projecting outwardly from said elongated member opposite to said holding means and a second handle secured to said elongated member proximate to said rolling means, said second handle including portions projecting outwardly from said elongated member opposite to said holding means and beyond said roller means.

4,278,245

APPARATUS FOR CLAMPING A PLURALITY OF ELEMENTS

Dante P. DiBattista, Lynn, and Robert H. Kuhn, Topsfield, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Nov. 23, 1979, Ser. No. 97,010
Int. Cl.³ B25B *11/00*
U.S. Cl. 269—22 **8 Claims**



1. Apparatus for clamping a plurality of electrodes, said apparatus comprising:

a housing defining a cavity, said plurality of electrodes extending through said cavity;

a medium adapted for pressurization disposed within said cavity;

means disposed within said cavity comprising a hollow cylindrical rigid member for receiving and surrounding each said electrodes and disposed between each electrode and said medium, said cylindrical rigid member including a relieved portion having an insert therein, said insert being movable against said electrode toward said rigid member in response to said pressurization of said medium for thereby clamping said electrode between said insert and said rigid member.

4,278,246

CLAMPING DEVICE

John B. Blake, 103 Oak Ave., Park Ridge, N.J. 07656

Filed Dec. 13, 1979, Ser. No. 103,185
Int. Cl.³ B25B *1/10*
U.S. Cl. 269—220 **11 Claims**

1. A clamp comprising

first and second oppositely-disposed arms, said arms having a pair of oppositely-disposed clamping jaws at one end of the arms;

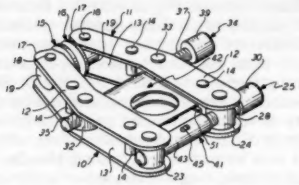
first and second force applying means for moving said arms towards and away from each other,

said first force applying means being pivotally connected to said arms at first pivot points spaced a distance from said one end of the arms, so that said clamping jaws are adapted to open and close when said arms are rotated about said first pivot points,

said second force applying means being pivotally con-

nected to said arms at second pivot points disposed intermediate said first pivot points and said one end of the arms, so that said clamping jaws are also adapted to open and close when said arms are rotated about said second pivot points,

whereby said first force applying means is adapted to open and close said jaws by rotating said arms about said



second pivot points and said second force applying means is adapted to open and close said jaws by rotating said arms about said first pivot points; and

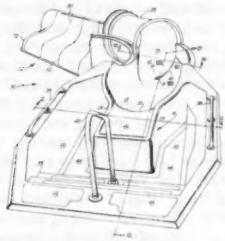
slideable support means interconnecting said first and second force applying means to permit relative lateral movement therebetween and prevent relative axial movement therebetween, to thereby limit skewing of said arms when said jaws are open.

4,278,247

WATER SLIDE

R. Brent Joppe, 1547 Parkhurst, NW., Grand Rapids, Mich. 49504, and Leonard F. Postema, R.R. #7, Morganton, N.C. 28655

Filed Feb. 26, 1979, Ser. No. 16,359
Int. Cl.³ A63G *21/18*
U.S. Cl. 272—56.5 R **13 Claims**



1. A water slide comprising:

a trough for slidingly conveying individual riders on a stream of water from an entry end of said trough to an exit end of said trough; said entry end being elevated with respect to said exit end; said trough having a generally U-shaped cross-section for retaining the riders therein;

means for introducing water into the entry end of said trough;

a loading platform positioned adjacent said entry end of said trough and having a seat with at least two sides from which a rider can load, and another side communicating with said trough entry end;

a starting pool reservoir defined by a floor located below said seat at an elevation which permits the rider to sit down onto said seat from a standing position; said reservoir further including sides extending at a level above said seat for containing water therein above the level of said seat, and means for introducing water into said reservoir; said reservoir surrounding said seat on at least said two sides, whereby the water in said reservoir flows over said seat two sides into said trough to at least contribute to said means for introducing water into the entry end of said trough and also allow riders easy entry onto said seat from multiple positions in said reservoir; and

an exit ramp located at said exit end of said trough.

10. A water slide comprising:

a trough for slidingly conveying individual riders on a stream of water from an entry end of the trough to an exit end of said trough; said entry end being elevated with respect to and forward of said exit end;

means for introducing water onto the entry end of said trough;

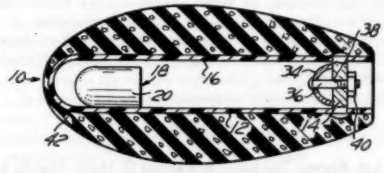
a multiple position exit ramp adapted to be located in a recovery pool, and being connected with said exit end of said trough, whereby the water running through said trough flows over said exit ramp; said exit ramp being adapted to extend partially above the level of water in the recovery pool, and having a substantially linear body with a slide surface with a curvilinear cross-section adapted to extend above the level of water and which cross-section slopes transversely of the longitudinal axis of said exit ramp body in a downward direction, for causing riders to exit said slide by sliding transversely over the surface of said exit ramp at different longitudinal positions therealong, depending upon the weight and speed of the rider to prevent riders from being dumped on each other at the end of the slide.

4,278,248

RHYTHM INDICATING EXERCISERS

Harry P. Kifferstein, 27250 Harvard Rd., Southfield, Mich. 48076

Filed Jun. 22, 1979, Ser. No. 51,113
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—68 **30 Claims**



1. An exercising device comprising an elongated circularly cylindrical tubular member of appropriate outer diameter as to be gripped by a hand, said tubular member having a bore of substantially constant diameter extending from end to end of said tubular member, a freely movable weighted mass within the bore of said tubular member, said weighted mass having at least one dimension greater than one-half the diameter of said tubular member and being adapted to be slidably displaceable from end to end therein, and a rigid stop member disposed at an end of said tubular member for impacting by said weighted mass and for emitting an audible sound upon impact shock with said weighted mass.

4,278,249

NECK EXERCISING DEVICE

Charles P. Forrest, 1306 St. Stephens Rd., Mobile, Ala. 36603

Filed Oct. 23, 1979, Ser. No. 87,518
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—94 **23 Claims**

1. A neck exercising device comprising:

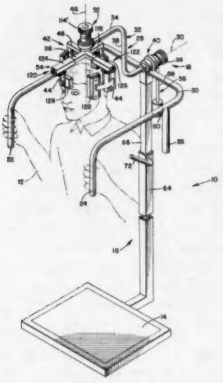
a top assembly secured at the approximate height of a trainee's neck to a suitable supprt, said top assembly having:

a fixed portion,

a first movable portion pivotally mounted to said fixed portion on a horizontal first pivot axis generally corresponding in height to the position of the trainee's neck,

a first mechanical resistance device arranged to resist pivotal movement of said first movable portion relative to said fixed portion,

a second movable portion having head gripping members and pivotally mounted to said first movable portion on a second pivot axis generally perpendicular to the horizontal first pivot axis and generally in alignment with an imaginary axis passing through the trainee's neck and through the top of the trainee's head when gripped, and



a second mechanical resistance device arranged to resist pivotal movement of said second movable portion relative to said first movable portion;

whereby the trainee may exercise the neck muscles through resisted pivotal movement on the horizontal first pivot axis effected, for example, by either side-to-side or front-to-back head motion depending on the precise orientation of the trainee with respect to said top assembly, as well as through resisted pivotal movement on the second pivot axis effected by head twisting motion.

4,278,250

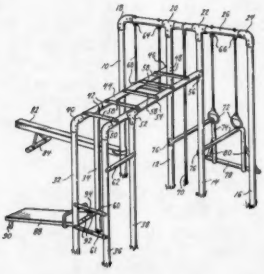
GYMNASIUM SET

William R. Baynes, DuQuoin, and Donal D. Hock, Herrin, both of Ill., assignors to Turco Manufacturing Co., DuQuoin, Ill.

Filed Aug. 13, 1979, Ser. No. 65,922

Int. Cl.[3] **A63B** *9/00;* **A63G** *9/00*

U.S. Cl. 272—113 **1 Claim**



1. A supporting frame, for use by gymnasts, which comprises a first plurality of vertically-directed columns, a first horizontally-directed spacing and connecting member which interconnects the upper ends of said columns to hold said upper ends of said columns in fixed, spaced-apart relation, said columns having lower ends adapted to be held in fixed, spaced-apart relation by being secured to the ground or other supporting surface, a second plurality of vertically-directed columns which are displaced horizontally from said first plurality of vertically-directed columns, a second horizontally-directed spacing and connecting member which is displaced from said first horizontally-directed spacing and connecting member, said second horizontally-directed spacing and connecting member being secured to one of said first plurality of vertically-directed columns intermediate the top and bottom of said one column and extending to and being secured to one of said second plurality of vertically-directed columns, a third horizontally-directed spacing and connecting member which is displaced from said first horizontally-directed spacing and connecting member, said third horizontally-directed spacing and connecting member being secured to a second of said first plurality of vertically-directed columns intermediate the top and bottom of said second column and extending to and being secured to a second of said second plurality of vertically-directed columns, rung-like connectors which extend between and rigidly interconnect said second and said third horizontally-directed spacing and connecting members, whereby said one and said second of said first plurality of vertically-directed columns and said one and said second of said second plurality of vertically-directed columns constitute end support for an overhead horizontally-directed exercise ladder, said first plurality of vertically-directed columns including at least three vertically-directed columns, a third column of said first plurality of vertically-directed columns acting through said first horizontally-directed spacing and connecting member to provide lateral stability and stiffening for said one and said second of said first plurality of vertically-directed columns and also acting through said first horizontally-directed spacing and connecting member and through said one of said first plurality of vertically-directed columns and through said second horizontally-directed spacing and connecting member to provide lateral stability and stiffening for said one of said second plurality of vertically-directed columns, said third column of said first plurality of vertically-directed columns also acting through said first horizontally-directed spacing and connecting member and through said second of said first plurality of vertically-directed columns and through said third horizontally-directed spacing and connecting members to provide lateral stability and stiffening for said second of said second plurality of vertically-directed columns, said columns of said first plurality of vertically-directed columns being aligned in a row, said second horizontally-directed spacing and connecting member and said third horizontally-directed spacing and connecting member being substantially parallel to each other, a third of said second plurality of vertically-directed columns being intermediate, and being aligned with, said one of said first plurality of vertically-directed columns and said one of said second plurality of vertically-directed columns, said third of said second plurality of vertically-directed columns being secured to said second horizontally-directed spacing and connecting member, said third of said second plurality of vertically-directed columns acting through said second horizontally-directed spacing and connecting member to help provide lateral stability and stiffening for said one of said first plurality of vertically-directed columns and also for said one of said second plurality of vertically-directed columns, and a swinging support for a person that is supported by, but can swing relative to, that portion of said first horizontally-directed spacing and connecting member which is intermediate said second and said third columns of said first plurality of vertically-directed columns, said third column of said first plurality of vertically-directed columns being displaced from said second of said first plurality of vertically-directed columns a distance great enough to accommodate said swinging support for said person, said third horizontally-directed spacing and connecting member being substantially normal to said row of aligned columns of said first plurality of vertically-directed columns, whereby said swinging support for said person can swing in a plane which is parallel to a plane that is defined by said second of said first plurality of vertically-directed columns and by said second of said second plurality of vertically-directed columns and

by said third horizontally-directed spacing and connecting member, whereby said second plurality of vertically-directed columns and said third horizontally-directed spacing and connecting member coact to help said second of said first plurality of vertically-directed columns resist the forces which will be applied to it when a person swings on said swinging support, and whereby said second plurality of vertically-directed columns and said second horizontally-directed spacing and connecting member and said one of said first plurality of vertically-directed columns and said first horizontally-directed spacing and connecting member coact to help said one of said first plurality of vertically-directed columns resist the forces which will be applied to it when a person swings on said swinging support, said swinging support for said person being movable through an arcuate path, said second of said first plurality of vertically-directed columns and said second of said second plurality of vertically-directed columns and said third horizontally-directed spacing and connecting member being located to one side of, and being laterally spaced away from, said arcuate path, said third column of said first column of said first plurality of vertically-directed columns being located at the opposite side of, and being laterally spaced away from, said arcuate path, said third column of said first plurality of vertically-directed columns being the only vertically-directed portion of said supporting frame which is at said opposite side of said path, all of the vertically-directed columns of said second plurality of vertically-directed columns being displaced substantial distances horizontally from said second column of said first plurality of vertically-directed columns to define a space which is devoid of vertically-directed columns, whereby both sides of said swinging path are substantially free of vertically-directed columns.

4,278,251

RACKET FRAME FOR BALL GAMES

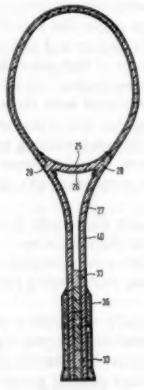
Paul Lafourcade, 23, rue de la Paix, 65 600 Semeac, France

Continuation of Ser. No. 793,554, Apr. 4, 1977, abandoned. This application Mar. 5, 1979, Ser. No. 17,631

Claims priority, application France, May 5, 1976, 76 13881; Sep. 30, 1976, 76 29987; Mar. 1, 1977, 77 06548

Int. Cl.³ A63B *49/12, 49/08*

U.S. Cl. 273—73 G **20 Claims**



1. A racket frame comprising:

(a) a generally round head having an open bottom portion and opposed openings positioned adjacent to said bottom portion;

(b) two parallel longitudinal branches extending downwardly from said head and forming a portion of a racket handle, said head and said branches being a one-piece unit comprising a hollow beam having a cavity of generally rectangular cross section with opposed webs and opposed flanges;

(c) a central bow attached to said head for closing said open bottom portion, said bow being a one-piece unit comprising a longitudinal channel having openings at its ends, said channel openings cooperating with said opposed openings; and

(d) a molded material extending through said cavity, said channel and all of said cooperating openings.

4,278,252

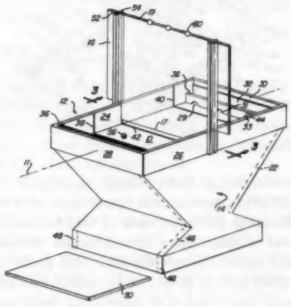
BALL AND PADDLE GAME AND EXERCISE APPARATUS

Robert A. Lyons, 295 Tucson St., Aurora, Colo. 80012

Filed Mar. 3, 1980, Ser. No. 126,669

Int. Cl.³ A63F *7/00*

U.S. Cl. 273—118 R **7 Claims**



1. Game apparatus for two players comprising:

a planar playing surface having a predetermined length and width within which a relatively dense ball is put in play;

support means for rigidly supporting said playing surface in a fixed position at approximately elbow level of said players;

retaining means, on the periphery of said playing surface retaining the ball on said playing surface;

a pair of spaced apart goal boards extending along the width of said playing surface for deflecting said ball when said ball strikes one of the goal boards;

said goal boards defining a plurality of goal openings through which said ball may pass; and

a transparent shield extending across the playing surface midway between said goal boards and extending in height from a lower edge above said playing surface a distance slightly greater than the diameter of said ball to an upper edge from about eighteen inches to about four eet from the playing surface.

4,278,253

GAME HAVING A SPIRALLY TRAVERSING CHANNEL

Tomiyuki Hirose, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Oct. 3, 1979, Ser. No. 81,397

Claims priority, application Japan, Oct. 11, 1978, 53-139506[U]

Int. Cl.³ A63F *9/02*

U.S. Cl. 273—121 R **15 Claims**

1. A game which comprises:

a housing including a playing surface located within the interior of said housing;

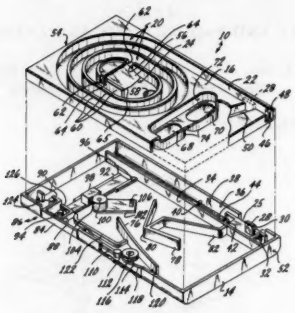
said playing surface including a spirally winding object guide means, said guide means having a launching end and a target end;

at least one object located within said housing and capable of fitting and moving within said guide means;

an object launching means located in said housing and operatively connecting to said launching end of said guide means and capable of launching an object into said guide means so as to cause said object to travel within said guide means from said launching end to said target end;

a target means located at said target end of said guide means;

a target activation means controlled by the operator of said game, said target activation means operatively associated with said target means and capable of activating said



target means for a finite period of time in response to control by said operator, the operator of said toy capable of coordinating the activation of said target means with the arrival of said object at said target means such that when said object travels through said guide means and concurrently arrives at said target end of said guide means during said finite period of time when said target is activated by said target activation means said target is capable of capturing said object.

4,278,254

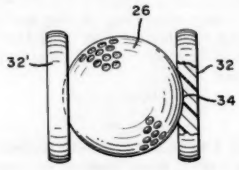
GOLF PUTTING DEVICE

Luther G. Simjian, 1750 S. Ocean La., Fort Lauderdale, Fla. 33316

Continuation-in-part of Ser. No. 89,613, Oct. 29, 1979, abandoned. This application Jul. 31, 1980, Ser. No. 174,195

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—183 C **4 Claims**



1. A golf putting device comprising:

a pair of spaced concentrically rotating wheels having a crown diameter approximating that of a golf ball and being spaced from each other by a distance for being addressed by a putter;

a sighting device in the form of an actual or simulated golf ball concentrically mounted between and to said wheels, and

the diameter of said wheels being slightly greater than that of said ball for causing said ball to be free of rolling contact with an underlying surface upon which said wheels roll.

4,278,255

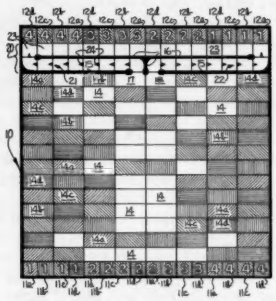
BOARD GAME APPARATUS

Harold J. Gilbert, 1900 Randolph Rd., Ste. 402, Charlotte, N.C. 28207

Filed Oct. 29, 1979, Ser. No. 89,232

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—248 **8 Claims**



1. A game apparatus for a plurality of players comprising, in combination,

a playing board having four sides and a playing surface,

means along one side of the playing board defining on said playing surface a plurality of individual starting spaces for each of the players, the number of starting spaces for each player being the same,

means along the opposite side of the playing board defining on the playing surface a plurality of individual destination spaces for each of the players, said destination spaces corresponding in number to the number of starting spaces,

means defining a visually discernible first characteristic associated with the respective starting spaces and destination spaces of each player for identifying the starting spaces and destination spaces as belonging to a particular player while distinguishing such starting spaces and destination spaces from those belonging to the other players,

means defining distinctive visually discernible second characteristics associated with the respective individual starting spaces of each player for identifying each individual starting space of a player and distinguishing it from the other starting spaces of that same player,

means defining corresponding visually discernible second characteristics associated with the respective destination spaces of each player for identifying a corresponding destination space for each starting space,

a set of playing pieces for each player, said playing pieces corresponding in number to the number of individual starting spaces,

said distinctive visually discernible first characteristic being associated with the playing pieces of each set for identifying the playing pieces as belonging to a particular player while distinguishing such playing pieces from those of the other players,

said distinctive visually discernible second characteristic also being associated with the playing pieces of each set of identifying each individual playing piece and distinguishing it from the other playing pieces of that same player and for also identifying the particular starting space and destination space applicable to that playing piece,

means on said playing surface defining a grid of longitudinally and laterally contiguous playing spaces between said starting spaces and said destination spaces,

partition means located on said playing surface between said starting spaces and said destination spaces and having a pair of openings therein through which the playing pieces must pass in order to reach said destination spaces,

respective individual pathways leading from each of said openings to said destination spaces,

said distinctive visually discernible first characteristic for each player also being associated with certain ones of said playing spaces and serving to define those playing spaces as safe spaces for a player whose playing piece is of that same first characteristic but which is not a safe space for players whose playing pieces are of a different first characteristic, and

a chance device for indicating the number of playing spaces for a player to move his playing pieces in attempting to advance the playing pieces from the starting space to the destination space.

4,278,256

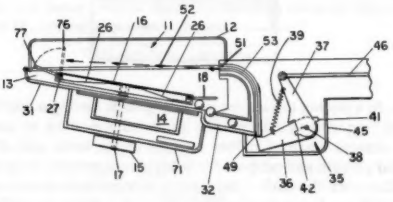
TARGET GAME

Raymond J. Lohr, 5043 Sterrettania Rd., Erie, Pa. 16506

Filed Aug. 10, 1979, Ser. No. 65,565

Int. Cl.[3] A63F *9/02;* **F41J** *9/00*

U.S. Cl. 273—368 **11 Claims**



1. A target game **(10)** comprising,

a toy gun **(72,73)** adapted to be held in the hand and carried about a play area in use,

an enclosed target area **(11)** rigidly attached to said gun adjacent the muzzle thereof and extending forwardly therefrom,

targets **(18)** supported in said target area,

means for moving said targets,

means for firing supported in said gun,

projectiles,

said firing means being adapted to impart velocities to the projectiles and to direct said projectiles into the target area,

said targets being moved through the path of the directed projectiles at a point in the target area opposite the point of attachment of the target area to the gun.

4,278,257

SOCCER KICKING AID

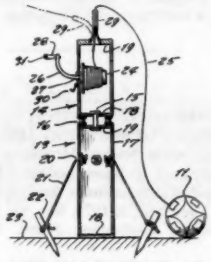
Juan M. Garcia, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Feb. 7, 1980, Ser. No. 119,384

Int. Cl.[3] A63B *69/00*

U.S. Cl. 273—411 **3 Claims**

1. A soccer kicking aid, comprising in combination, a vertical goal post including a hollow base and a hollow extension swivelled thereupon, said hollow extension containing a reel therein, a nylon cord wound around said reel, said cord extending outward through a flexible hose on top of said extension and being tethered to a soccer ball.



4,278,258

CONTAINER FOR HOLDING AT LEAST ONE RECORDING DISK AND DISK PLAYING SYSTEM

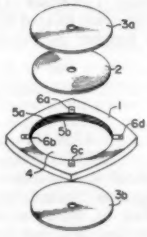
Makoto Fujita, Kadoma; Shoji Omiya, Shijonawate, and Izumi Hino, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 17, 1979, Ser. No. 76,128

Claims priority, application Japan, Sep. 27, 1978, 53/119586; Sep. 27, 1978, 53/119587; Mar. 15, 1979, 54/30745; Mar. 15, 1979, 54/30746; Apr. 11, 1979, 54/44698; Apr. 13, 1979, 54/45643; May 8, 1979, 54/55986; May 16, 1979, 54/60189; May 16, 1979, 54/60190; May 18, 1979, 54/61820

Int. Cl.[3] B65D *85/57;* **G11B** *17/04*

U.S. Cl. 369—36 **16 Claims**



1. A container for a recording disk having at least on one surface thereof a signal recording surface on which signals are recorded, said container comprising:

a container base made of rigid material, including a circular opening at least on one surface thereof and having a diameter greater than the diameter of the recording disk, a surrounding portion around said circular opening, a plurality of guide grooves each having one end opened to said circular opening and the other end terminated in said surrounding portion, and at least one disk holding space in the interior thereof and communicating with said circular opening; and

a plurality of engaging and holding members made of flexible material, each having a forward end portion and a rear end portion, and being disposed in said each guide groove so as to be selectively movable between a first position in which said forward end portion projects into the circular opening to lock the recording disk in said disk holding space and a second position in which said forward end portion withdraws to release the recording disk from the disk holding space through the circular opening, thereby said engaging and holding member being arranged to be

bent in said rear end portion in the vicinity of the other end of said guide groove when moved from said first position to said second position so that the engaging and holding member is partly withdrawn from the guide grooves in moving in sliding motion.

4,278,259

DEVICE FOR SEALING SPINNING ROTOR IN AN OPEN-END SPINNING APPARATUS

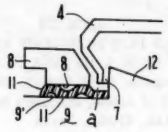
Kinpei Mitsuya, Aichi; Noriaki Miyamoto, and Masao Shiraki, both of Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Nov. 5, 1979, Ser. No. 91,689

Claims priority, application Japan, Nov. 6, 1978, 53-152609[U]

Int. Cl.³ D01H *1/12*; F16J *15/16*

U.S. Cl. 277—12 **8 Claims**



1. A rotor sealing device used on an open-end spinning apparatus having a spinning rotor which forms therein air-discharge apertures, the opening in said spinning rotor being openably closed by a body member which has a fibers delivery aperture formed therein; said rotor sealing device being characterized in that a sealing member which is supported on said body member by means of an elastic or resilient material member is inserted into the space located between said rotor opening and said body member positioned in opposite relation thereto.

4,278,260

SEAL UNIT

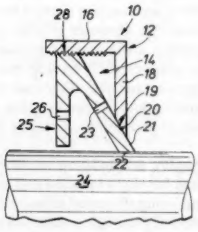
John E. Brown, Mansfield Woodhouse, England, assignor to West & Sons (Engineers) Limited, Nottinghamshire, England

Filed Oct. 15, 1979, Ser. No. 84,734

Claims priority, application United Kingdom, Mar. 11, 1978, 09739/78

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—110 **4 Claims**



1. A seal unit for providing a seal between a shaft and a housing through which the shaft projects, the unit including an annular casing having a cylindrical portion and an inwardly directed flange portion, an annular seal element having an outer peripheral edge for contacting the inner face of the cylindrical portion and an inner peripheral edge for sealingly engaging the shaft, the outer peripheral edge of the seal element and the inner face of the cylindrical portion each having a screw thread formation so that on rotation of the seal element relative to the casing the seal element is placed under an axial compressive loading which causes the inner edge to move radially inwardly to engage the shaft.

4,278,261

SEALING DEVICE

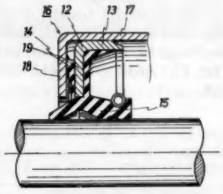
Takeshi Miura, and Yasuo Yamamoto, both of Fukushima, Japan, assignors to Nippon Oil Seal Industry Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1979, Ser. No. 50,526

Claims priority, application Japan, Aug. 23, 1978, 53-115309[U]

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—153 **1 Claim**



1. In a sealing device for a rotating shaft having a reinforcement ring with an axial portion and a radial portion, an annular lip element made of rubber secured to the inner end of said radial portion and adapted for sealing engagement on its inner surface with the shaft, a cap having a cylindrical portion and a radial flange being positioned in use so that the inner surface of said cylindrical portion engages the outer surface of said axial portion of said ring and an annular space is provided between said flange and said radial portion of said reinforcement ring, and a lip-like annular rubber seal extending radially from said lip element in said annular space, the improvement comprising an annular groove in the radially outermost surface of said lip-like annular seal and a stepped portion in the surface of said lip-like annular seal adjacent the inner surface of said flange forming a reduced thickness toward the radially inner portion of said seal, said radially outer portion of said seal being tightly compressed between said radial flange of said cap and said radial portion of said reinforcement ring.

4,278,262

RUBBER BOOT FOR USE IN UNIVERSAL JOINT

Hitoshi Mizutani, Aichi; Zenji Nakajima; Yoshito Horikiri, both of Toyota; Hiroshi Harada, Takaishi, and Yasushi Yokotsuji, Hirakata, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and The Toyo Rubber Industry Co., Ltd., Osaka, both of, Japan

Filed Aug. 27, 1979, Ser. No. 70,084

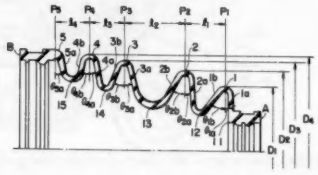
Claims priority, application Japan, Aug. 25, 1978, 53-104206

Int. Cl.³ F16J *3/00*

U.S. Cl. 277—212 FB **9 Claims**

1. A boot having one end formed with a small diameter portion adapted to be connected to a drive shaft and having the other end formed with a large diameter portion adapted to be connected to universal joint casing, said boot comprising a bellows structure having alternating ridges and valleys with valleys adjacent to said large diameter portion having diameters larger than those of valleys adjacent to said small diameter portion, the ridges adjacent to said small diameter portion having ridge planes facing toward said small diameter portion

and opposite ridge planes facing toward said large diameter portion wherein the angles of each of said ridge planes relative to corresponding diametrical planes which pass through each of said ridges are in a range of 0° to 6° and angles of corresponding opposite ridge planes relative to said diametrical planes are in a range of 30° to 38°, the ridges adjacent to said large diameter portion having ridge planes each facing toward said small diameter portion and opposite ridge planes each



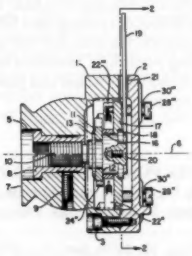
facing toward said large diameter portion wherein the angles of each of said ridge planes relative to corresponding diametrical planes which pass through each of said ridges are in a range of 11° to 17° and angles of corresponding opposite ridge planes relative to each of said diametrical planes are in a range of 0° to 35°, and the distance between two neighbouring ridges positioned at a longitudinally center portion of said boot being 1.5 to 1.8 times greater than the distance between adjacent ridges in remaining portions thereof.

4,278,263

QUICK-RELEASE CLAMP FOR MICROTOMES

Julius S. Rosen, Buffalo, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Oct. 24, 1979, Ser. No. 87,903
Int. Cl.³ B23B *31/00*
U.S. Cl. 279—1 R **5 Claims**



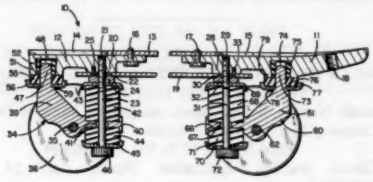
1. A clamp comprising a main body and retaining means for releasably holding an object against one end of said main body, said body having a cavity with an internally threaded bore on an axis and extending away from said one end a rotatable member threadably engaging said threaded bore for axial movement when said member is rotated, said retaining means including a plurality of object gripping fingers, said rotatable member being connected to said fingers to provide movement in a direction normal to said one end during said axial movement, and means adapted to cooperate with said rotatable member for laterally moving said fingers relative to each other and to said one end.

4,278,264

SKATE

Brent L. Lenz, 610 S. Lake St., Long Prairie, Minn. 56347

Filed Jul. 6, 1979, Ser. No. 55,175
Int. Cl.³ A63C *17/02*
U.S. Cl. 280—11.28 **25 Claims**



1. A skate comprising: first plate having a first pocket, a second plate having a second pocket, each pocket having a bottom, an open end, and a generally cone-shaped side wall that converges from the bottom of the pocket toward the open end of the pocket, said first and second plates adapted to be connected to a foot supporting structure, jump bar means connected to the first and second plates, means attaching the jump bar means to said first and second plates, a first truck mounted on the first plate, a second truck mounted on the second plate, wheel means rotatably mounted on each of said first and second trucks for supporting the skate on a skating surface, said first truck having an upright first finger means having a vertical axis, said finger means having a first portion located in the pocket of the first plate, first resilient collar means located in said first pocket, said first collar means having a side wall engageable with the cone-shaped side wall of the first pocket and a central hole accommodating a first portion of said upright first finger means, first annular resilient means surrounding a second portion of said first finger means engageable with said first plate, means supporting the first annular resilient means on said first truck whereby the first collar means and the first annular resilient means yieldably retain the first finger means in an upright position, said second truck having upright second finger means having a vertical axis, said second finger means located in the pocket of the second plate, second resilient collar means located in said second pocket, said second collar means having a side wall engageable with the cone-shaped side wall of the second pocket and a central hole accommodating a first portion of said upright second finger means, second annular resilient means surrounding a second portion of the second finger means engageable with the second plate, and means supporting the second annular resilient means on said second plate whereby the second collar means and second annular resilient means yieldably retain the second finger means in an upright position, first means yieldably connecting the first truck on the first plate, said first means including an upright bolt extended generally parallel to said first finger means connected to said first plate, and second means yieldably connecting the second truck on the second plate, said second means including a second upright bolt extended generally parallel to the second finger means connected to the second plate.

16. A skate comprising: a first plate, a second plate, said first and second plates adapted to be connected to a foot supporting structure, jump bar means connected to the first and second plates, means attaching the jump bar means to said first and second plates, said jump bar means comprising a plurality of bars connected to the first and second plates, one of said bars having end portions located in engagement with the first and second plates, said means attaching the jump bar means to said first and second plates including bolt and nut means connecting said end portions to the first and second plates, pin means spaced from the bolt means located in aligned holes in said first and second plates and said end portions to align the one of said bars on the first and second plates and reduce bending and shearing forces of said one of said bars on said bolt means, a

first truck mounted on the first plate, a second truck mounted on the second plate, wheel means rotatably mounted on each of said first and second trucks for supporting the skate on a skating surface, first means yieldably mounting the first truck on the first plate, second means yieldably mounting the second truck on the second plate.

4,278,265

REAR HUB FOR A BICYCLE HAVING IMPROVED SPOKE PROTECTOR MOUNTING

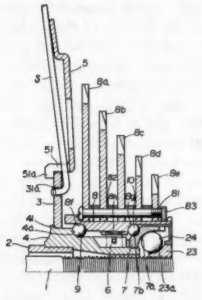
Masashi Nagano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Apr. 3, 1979, Ser. No. 26,694

Claims priority, application Japan, Apr. 14, 1978, 53/49837[U]

Int. Cl.³ B60R *19/00;* **B62J** *13/00*

U.S. Cl. 280—160.1 **3 Claims**



1. A rear hub for a bicycle, comprising:

a hub shaft;

a hub shell having first and second hub flanges at respective ends thereof rotatably supported to said hub shaft;

a bearing cone extending from one axial end of said hub shell axially outwardly of said first hub flange;

a driving member having at least one sprocket rotatably supported to said bearing cone, a sprocket of said driving member being located adjacent said fist hub flange;

a unidirectional rotary transmission mechanism inserted between said bearing cone and said driving member for transmitting the driving force from said driving member to said bearing cone; and

a disc-shaped spoke protector larger in outer diameter than said sprocket mounted to and adjacent said first hub flange, such that the outer surface of said spoke protector opposes the teeth of said sprocket located adjacent said hub flange; said spoke protector having a central disc portion which is elastically deformable relative to an outer peripheral disc portion thereof, said central portion defining a center bore and having a plurality of retainers attached to and emanating from said central portion at a location adjacent said center bore, said plurality of retainers extending toward said first hub flange and having hook-shaped retaining portions which elastically deform to lockingly engage with said first hub flange when pressure is applied to said central portion axially of said protector toward said first hub flange, said spoke protector contacting at a position radially outward from said center bore with spokes carried by said first hub flange and being elastically deformed at said central portion relative to the outer portion when said retaining portions are lockingly engaged with said first hub flange whereby said spoke protector is fixed to said first hub flange and retained against said spokes.

4,278,266

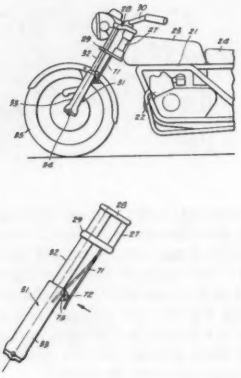
FRONT FORK CONSTRUCTION FOR MOTORCYCLE

Hidehiko Inoue, Ooi; Masao Nishikawa, Tokyo, and Nobuo Anno, Urawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1979, Ser. No. 59,286

Int. Cl.³ B62K *21/02, 25/04*

U.S. Cl. 280—276 **3 Claims**



1. A front wheel suspension assembly for a motorcycle comprising, in combination: parallel telescoping forks of the hydraulic type which straddle the front wheel and which are inclined downward in a forward direction, thereby producing a bending moment in said forks with the motorcycle supported in an upright position upon a horizontal surface, each fork comprising an upper tube telescopically mounted within a bottom tube and containing a body of oil, said tubes having continuous cylindrical surfaces in sliding contact and lubricated by said body of oil, upper and lower bridges fixed to the upper portions of said upper tubes, means mounting said front wheel for rotation on said bottom tubes, an element fixed to the upper end of each of the bottom tubes, and means including leaf springs fixed to said lower bridge for applying a generally forwardly and upwardly directed resultant force to said elements in opposition to forces creating said bending moment to thereby reduce sliding friction between said telescoping tubes, said leaf springs being positioned rearward of a vertical plane containing the axis of the front wheel and positioned below the upper ends of said upper tubes.

4,278,267

EQUIPMENTS FOR ATTACHING TRAILERS

Gilbert M. Vasseur, La Compte par Houdain, France, assignor to Societe Anonyme Etablissements Vasseur & Cie, Champigny, France

Filed Aug. 10, 1978, Ser. No. 932,456

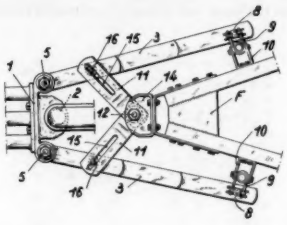
Claims priority, application France, Sep. 9, 1977, 77 27286

Int. Cl.³ B60D *1/00;* **B60T** *7/20*

U.S. Cl. 280—406 R **6 Claims**

1. In a coupling for connecting a trailing vehicle having a coupling seat to a tractor vehicle, said coupling including a coupling fitting mounted on said tractor vehicle, an inertial braking system mounted on said coupling seat, a spherical joint pivotally connecting said braking system to said coupling fitting, a pair of elastically deformable stabilizing bars, forward ends of said bars being pivotally connected to said coupling fitting about vertical axes at opposite lateral sides of said spherical joint, respectively, and means connected to said coupling seat for tensioning rearward ends of said bars upwardly so as to provide for equilibration of forces affecting the tractor vehicle,

the improvement comprising means for eliminating the effect of said tensioning of said bars on said braking system, said eliminating means comprising a pair of elastically deformable arms, first end portions of said arms being pivotally connected



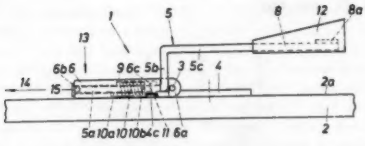
to said coupling seat about a common vertical axis, and second end portions of said arms being in constant permanent abutment with said pair of bars respectively, said arms exerting a downward force on said bars in opposition to the force of said tensioning means.

4,278,268

SKI BRAKE

Tibor Szasz, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Sep. 12, 1979, Ser. No. 74,623
Claims priority, application Austria, Sep. 19, 1978, 6739/78
Int. Cl.³ A63C 7/10
U.S. Cl. 280—605 **10 Claims**



1. A ski brake, comprising:

base plate means adapted to be mounted on an upper surface of a ski;

pedal means pivotally secured to said base plate means and pivotal between a first position generally parallel to said upper surface of said ski and a second position inclined at an angle to said upper surface of said ski;

first resilient means for continually urging said pedal means toward said second position;

means defining at least one bearing opening in said pedal means;

brake blade means rotatably mounted in said bearing opening and being movable between first and second locations, said brake blade means comprising a first wire segment rotatably received in said bearing opening, a second wire segment, in said first location thereof, extending generally parallel to the longitudinal axis of and above said upper surface of said ski when said pedal means is in said first position, said second wire segment being offset from said first wire segment and, in said second location thereof, extending alongside of a lateral edge of said ski and projecting below the under surface of said ski when said pedal means is in said second position, and a third wire segment connecting said first and second wire segments;

second resilient means for urging said brake blade means toward said first location thereof; and

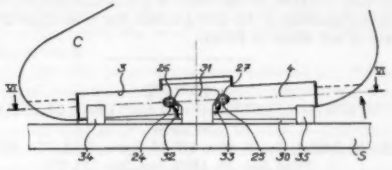
connecting means coupled to said brake blade means and said base plate means for effecting a movement of said brake blade means toward said second location against the urging of said second resilient means and in response to a movement of said pedal means toward said second position under the urging of said first resilient means.

4,278,269

COMBINED SKI BOOT AND SAFETY BINDING

Jean J. A. Beyl, Nevers, France, assignor to Look, Nevers, France

Filed Jul. 12, 1979, Ser. No. 57,081
Claims priority, application France, Jul. 13, 1978, 78 21053
Int. Cl.³ A63C 9/08
U.S. Cl. 280—613 **14 Claims**



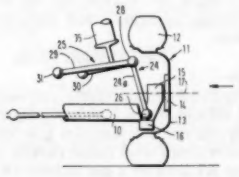
1. An assembly comprising a combined ski boot and a safety ski binding embedded in the boot sole and adapted to releasably retain the boot on the ski by cooperating with a complementary member secured to the top surface of a ski, wherein the boot sole has formed therein a recess dimensioned for receiving a flat elonagated case rotatably mounted on a pivot member rigid with said boot sole and projecting from the bottom of said recess at right angles to the top surface of the ski, said case including boot retaining means on each lateral side thereof for engaging said complementary member to normally hold said case on the ski, resilient means within said case for insuring engagement of said retaining means and said complementary member and acting on said pivot member to urge said boot to its normal position relative to said case on the ski, such that any rotational movement of said boot and said pivot member which tends to move said boot away from its normal position will release said boot retaining means from its normal operative position in relation to said complementary member rigid with the ski, and conversely that in case of a forward or backward fall, a movement of said retaining means will release the action of said resilient means on said pivot member and enable said pivot member and said boot to rotate on the ski, whereby in each case said boot and said case may be released from said complementary member.

4,278,270

SPRUNG VEHICLES

Timothy S. Fry, Dunchurch, England, assignor to GKN Group Services Limited, Great Britain

Filed Aug. 2, 1978, Ser. No. 930,176
Claims priority, application United Kingdom, Aug. 13, 1977, 34080/77; Aug. 13, 1977, 34081/77
Int. Cl.³ B60G 3/20
U.S. Cl. 280—675 **8 Claims**



1. A vehicle comprising a chassis, a rigid axle, and a link assembly at each end of the axle, each such assembly comprising a first rigid link, means providing a pivotal connection

between one end of said first rigid link and the axle, a second rigid link, means providing a pivotal connection between one end of the second rigid link and the chassis and means providing a pivotal connection between the other end of the second rigid link and the other end of the first rigid link and for stabilising said pivotal connection relative to one of the axle and the chassis, and spring means connected between the second link and the chassis resiliently to support the chassis and axle relative to one another, the pivotal connection between said one end of the first rigid link and the axle lying substantially on the centre line of the road wheel to be supported at the respective axle end so that the displacement of the spring means due to a displacement, perpendicular to a reference surface on which the vehicle stands, of the wheel in roll is substantially equal to the displacement of the spring means due to an equal displacement of the wheel in bump.

4,278,271

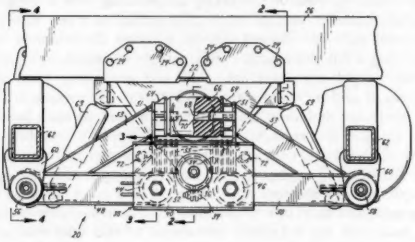
SUSPENSION SYSTEM WITH CENTRAL ELASTOMER SPRING

John E. Raidel, Rte. 9, Box 400-M, Springfield, Mo. 65804

Filed Jan. 21, 1980, Ser. No. 113,472

Int. Cl.³ B60G *5/00*

U.S. Cl. 280—687 **17 Claims**



1. A vehicle suspension assembly for a tandem axle vehicle including a pedestal adapted to be suspended from said vehicle's chassis and between said axles, a compensator pivotally connected to said pedestal, a first torque beam pivotally connected at an end to the fore axle and pivotally connected at its other end to said compensator, a second torque beam pivotally connected at an end to the rear axle and at its other end to said compensator, a central, horizontally disposed, principal load-bearing spring means extending between said first and second torque beams, the compensator including a spring means extending between each of said first and second torque beams and said compensator to resist pivoting movement of said torque rods caused by vertical deflection of said axles.

4,278,272

HYDROPNEUMATIC SPRING SUSPENSION DEVICE FOR VEHICLES

Heinz Leibeling, Siegburg, Fed. Rep. of Germany, assignor to Boge GmbH, Eitorf, Fed. Rep. of Germany

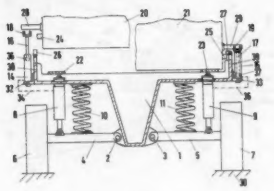
Filed Oct. 3, 1979, Ser. No. 81,560

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843436

Int. Cl.³ B60G *11/26*

U.S. Cl. 280—708 **7 Claims**

1. In a hydropneumatic spring suspension, especially for automotive vehicles with a load bed, comprising a hydropneumatic spring element that produces gaseous elastic forces and damping forces with a work piston slidable in an oil-filled work chamber that is loaded by a gas cushion whereby the pressure of the gas cushion determines a variable bearing force and spring characteristic of the spring element, and a shunt chamber from which a pressure medium is supplied to the spring element to vary the bearing force and spring characteristic of the spring element, the improvement wherein said shunt chamber comprises an auxiliary cylinder for connection with a laid bed, and an auxiliary piston slidable in said auxiliary cylinder and provided with receiving devices for a load unit to be mounted on the load bed, the auxiliary piston and cylinder being so constructed and arranged that when the load unit is positioned on the load bed the auxiliary piston is automatically



forced by the weight of the load unit from an extended position into a retracted position so as to force pressure medium from the auxiliary cylinder to said spring element to increase the pressure of the gas cushion therein and hence increase the bearing force and change the spring characteristic of said spring element.

4,278,273

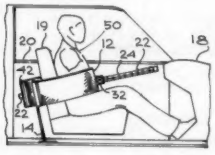
PERSONAL SAFETY RESTRAINT ASSEMBLY FOR VEHICLE OCCUPANTS

Robert D. Schiff, 3370 Wrightwood Dr., Studio City, Calif. 91604

Filed Sep. 4, 1979, Ser. No. 72,150

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—802 **6 Claims**



1. A personal safety restraint assembly for occupants seated in a vehicle, comprising in association with a seat in the vehicle:

a broad band of flexible material adapted to cover a portion of the occupant's pelvic region and rib cage;

first attachment means mounted to the floor of the vehicle at the rear of the innermost side of the seat and extending above the level of the seat, one end of said band being secured to said attachment means at an elevation above the floor substantially level with the occupant's mid-section;

a guide fixed to the vehicle door adjacent the seat at an elevation above the floor substantially level with the occupant's mid-section;

second attachment means slidably mounting the other end of said band to said guide;

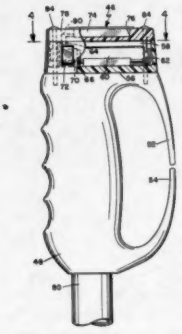
manually operable positioning means associated with said second attachment means for selectively positioning said second attachment means on said guide and in cooperation with said first attachment means thereby positioning said band transversely across the occupant's pelvic region and lower rib cage; and

locking means associated with said positioning means for releasably locking said second attachment means to said guide in selected positions thereon.

4,278,274
SKIER'S WARNING DEVICE

Gene S. Ray, 1360 Forest Ave., Carlsbad, Calif. 92008

Filed May 21, 1979, Ser. No. 40,757
Int. Cl.[3] A63C *11/22*
U.S. Cl. 280—821 1 Claim



1. A skier's warning device comprising in combination:

a ski pole grip having an outer surface formed into a hand fitting configuration, and including a cylindrical bore for detachably mounting said grip on the upper end of a ski pole, a housing detachably mounted on the top of said ski pole grip and including an upwardly opening battery cavity therein,

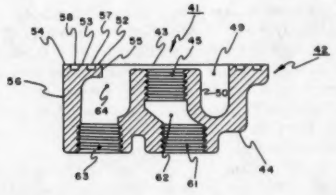
a detachable cover mounted on said housing covering said battery cavity,

an audible warning device carried in said housing and comprising a source of electrical power including a battery mounted in said battery cavity in said housing, a sound generating transducer mounted in said cover and directed generally upward along the axis of said bore in a generally forward direction when a pole on which said grip is mounted is held in a normally horizontal position pointing behind a skier, an electrical circuit including a normally open switch disposed on one side of said housing for activation by a thumb for selectively connecting said electrical power to said transducer and including a leaf spring conductor in said battery cavity for defining a portion of said circuit and wherein said switch includes a push button for biasing said leaf spring conductor into engagement with another conductor.

4,278,275
UNIVERSAL COUPLING ADAPTER FOR REMOTE FLUID COOLING OR FILTERING

Paul W. Diederich, Jr., 633 Hunters Trail, Glendora, Calif. 91740

Filed Oct. 22, 1979, Ser. No. 87,101
Int. Cl.[3] F16L *39/00*
U.S. Cl. 285—12 5 Claims



1. An adapter for coupling a remotely-located fluid circulation device to the fluid reservoir of a hydraulic system in place of a fluid filter, comprising in combination:

(a) a generally disk-shaped body having first and second end surfaces, the first end surface being adapted for abutment adjacent the outlet surface of the fluid reservoir in place of a fluid filter;

(b) a centrally-located bore extending into said disk-shaped body from said first end surface;

(c) a cavity extending partially into said disk-shaped body from the first end surface;

(d) first, second, and third spaced-apart concentric ridges of different diameters formed at the first end surface of said disk-shaped body, said first ridge being adjacent to the outer peripheral surface of said cavity, said third ridge being adjacent to the outer peripheral edge of said disk-shaped body;

(e) an inner circular groove situated between said first and second concentric ridges and extending partially into said disk-shaped body from the first end surface;

(f) an outer circular groove situated between said second and third concentric ridges and extending partially into said body from the first end surface, said outer circular groove having a larger diameter than said inner circular groove, one of said inner or outer diameter grooves being adapted for receiving a single O-ring when the adapter is to be attached to the fluid reservoir of a hydraulic system, said inner circular groove receiving an O-ring having a first diameter size when the adapter is used to provide a fluid-tight seal between the first end surface of said disk-shaped body and a fluid reservoir whose outlet surface is of a first diameter size, said outer circular groove being adapted for receiving an O-ring having a second and larger diameter size when the adapter is used to provide a fluid-tight seal between the first end surface of said disk-shaped body and a fluid reservoir whose outlet surface is of a second and larger diameter size;

(g) an inlet port extending from the second end surface of said disk-shaped body, said inlet port having a passageway extending into said disk-shaped body and interconnected with said centrally-located bore; and

(h) an outlet port extending from the second end surface of said disk-shaped body, said outlet port having a passageway extending into said disk-shaped body and interconnected with said cavity, said outlet port being situated near the edge of said disk-shaped body and the passageway interconnecting said outlet port with said cavity being situated beneath said first and second concentric ridges and said inner circular groove, said inlet and outlet ports being adapted for coupling the adapter to a remotely-located fluid circulation device.

4,278,276
DEVICE FOR A COUPLING UNIT HAVING CONNECTABLE AND DISCONNECTABLE PARTS

Kjell R. Ekman, Zug, Switzerland, assignor to Ekman Engineering AG, Switzerland

Continuation-in-part of Ser. No. 740,520, Nov. 10, 1976, abandoned. This application Jul. 6, 1978, Ser. No. 922,266
Claims priority, application Sweden, Nov. 12, 1975, 7512669; Feb. 16, 1976, 7601674
Int. Cl.[3] F16L *11/12*
U.S. Cl. 285—49 10 Claims

1. A coupling device for transporting fluid from a source of fluid to an output conduit without fluid leakage even during extreme vibration of said coupling, and comprising:

a first tubular coupling member having a fluid passageway extending therethrough;

a second tubular coupling member having a fluid passageway extending therethrough;

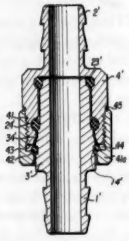
said first and second tubular coupling members each having on a respective first end portion means for permitting contact-free insertion of said first tubular coupling part

into said second tubular coupling part, thereby aligning said flow passageways extending therethrough;

a first circumferentially extending recess formed in an interior surface portion of said second tubular coupling member both radially and axially confronting a first circumferentially extending sealing surface countersunk adjacent an end surface of said first tubular coupling member and a second circumferentially extending recess formed in a further interior surface portion of said second tubular coupling member longitudinally spaced from said first recess and radially confronting a second circumferentially extending sealing surface countersunk in an exterior surface portion of said first tubular coupling member longitudinally spaced from said first countersunk sealing surface;

separate sealing ring means positioned in each pair of radially aligned recesses and countersunk sealing surfaces for suspensing said first tubular coupling member out of contact with said second tubular coupling member, to supress the transmission of vibrations therebetween, while limiting the insertion of said tubular coupling members into one another;

a hollow nut assembly surrounding a portion of said second tubular coupling member and including attachment means engaging complimentary attachment means formed on said second tubular coupling member for fixedly attaching



said hollow nut assembly to said second tubular coupling part;

said hollow nut assembly including a portion overlapping and facing a substantially radially extending end wall of said second tubular coupling member to define a circumferentially extending slot therebetween;

said slot being spaced from said second circumferentially extending recess formed in said tubular coupling member a longitudinal distance less than the longitudinal distance between said first and second recesses to maintain proper journalling support between said first and second tubular coupling members irrespective of bending forces which affect the coupling device;

a resilient locking ring extending partially into said slot and confronting stop means formed on an exterior surface portion of said first tubular coupling member; and

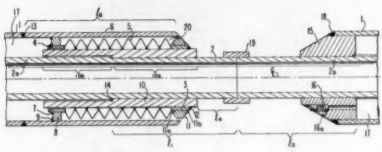
said hollow nut portion having wall means positioned for engaging and basing said resilient locking ring into tight frictional contact with said stop means, thereby biasing said first tubular coupling member into fluid-tight engagement with said separate sealing ring means, whereby one of said sealing ring means is compressed between said first recess and said first countersunk sealing surface to prevent further insertion of said first tubular coupling member into said second tubular coupling member.

4,278,277

STRUCTURE FOR COMPENSATING FOR DIFFERENT THERMAL EXPANSIONS OF INNER AND OUTER CONCENTRICALLY MOUNTED PIPES

Pieter Krijgsman, P.O. Box 68, 8050 AB, Netherlands

Filed Jul. 26, 1979, Ser. No. 60,998
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—93 **8 Claims**



1. A structure for sealing the annular space between an inner pipe and an outer pipe, coaxially mounted, with an annular space between them comprising:

a first pipe section for concentrically overlying said inner pipe, said first pipe section having a first end and a second end, said first end of said first pipe section being adapted to be attached to one end of the inner pipe;

first annular-shaped ring means joined circumferentially around and to the outer surface of the first end of said first pipe section;

second annular-shaped ring means slidably formed around the outer surface of the second end of said first pipe section;

a second pipe section having substantially the same inner and outer diameters as said outer pipe, said second pipe section having circumferentially attached to its inner surface said second annular-shaped ring means;

an annular-shaped bellows diaphragm one end of which is circumferentially, joined to said first annular-shaped ring means and the other end of which is joined to said second annular-shaped ring means, said annular-shaped bellows diaphragm extending concentrically and longitudinally along the outside of said first pipe section and inside said second pipe section and being adapted to expand or contract in the direction of the longitudinal axes of said inner and outer pipes; and

said second pipe section being adapted to be joined to the outer pipe in said pipe string thereby to seal said annular space, said second annular-shaped ring means being adapted to move longitudinally relative to said first pipe section attached to said inner pipe.

4,278,278

MEANS FOR TENSIONING TUBING IN A WELLHEAD ASSEMBLY

Joe G. Chambless, and Paul E. McGlasson, both of Shreveport, La., assignors to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Aug. 30, 1979, Ser. No. 71,213
Int. Cl.³ F16L *39/00*
U.S. Cl. 285—143 **7 Claims**

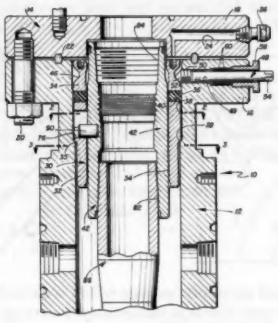
1. In a wellhead assembly having an outer tubing head, an intermediate hanger bowl supported on the tubing head, and an inner hanger having a tubing string supported therefrom; an improved means for tensioning the tubing string after anchoring the lower end of the tubing string comprising:

a plurality of cam slots in said hanger bowl extending upwardly from the lower end thereof, each slot being of a generally inverted "J" configuration having a relatively wide mouth portion at its lower end and being defined by a pair of spaced side surfaces converging from said mouth portion to a relatively narrow throat portion, one of said side surfaces of each slot having an upwardly directed portion extending from said mouth portion to an upper

arcuate corner and a downwardly directed portion extending from the arcuate corner to a pin support;

said hanger having a plurality of pins secured to and extending outwardly from the outer periphery of the hanger for fitting within said cam slots and seating within the pin supports;

said pins upon lifting of the hanger and supported tubing string from a position below the hanger bowl being guided



by the converging side surfaces of the cam slots to the throat portions and then to the upper arcuate corners at which location upward movement of the hanger and tubing string is stopped;

then upon a subsequent lowering of the hanger and tubing string, the pins ride along said downwardly directed portions and are seated in the pin supports for supporting the hanger and tubing string.

4,278,279

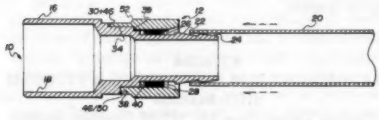
CAM-LOCK FITTING

Harry M. Zimmerman, 5708 Baltimore Dr. #399, La Mesa, Calif. 92041

Filed Jun. 7, 1979, Ser. No. 46,342

Int. Cl.[3] F16L *33/22*

U.S. Cl. 285—255 **11 Claims**



1. A tube connector comprising:

(a) a hollow generally tubular body comprises a shank, a nipple of outside diameter less than that of said shank, and a central portion intermediate said shank and said nipple and being of outside diameter less than that of said nipple such that the end of a flexible hose can be received over said nipple and central portion;

(b) a collar engaged on said body around said central portion and being axially movable from a position in axial abuttment with said shank toward said nipple, said collar having an interior surface with a taper which expands toward the nipple end of said body such that axial advancement of said collar along said body toward said nipple creates a decreasing clearance between said nipple and said interior surface, the dimensions of said nipple and interior surface being such that advancement urges said collar into increasing circumferentially pinched relation with a hose received over said nipple to securely lock same thereon;

(c) said tubular body defining a coaxial helical ramp along the edge of said shank abutting said collar and said collar defining a ramp follower surface to slide along said ramp such that when said collar is rotatably adjusted in one direction it is axially advanced into said increasing circumferentially pinched relation with a hose on said nipple, whereby alternatively rotatation or direct non-rotational axial advancement of said collar will similarly effect locking engagement of a hose on said nipple with or without a mechanical advantage, respectively, and reverse axial displacement of said collar on said body disengages same from a hose on said nipple.

4,278,280

LOCKABLE AUTOMOBILE TRUNK EXTENSION

Abraham Rashbaum, 199-29 22nd Ave., Whitestone, N.Y. 11357

Filed Oct. 4, 1979, Ser. No. 81,643

Int. Cl.[3] E05C *17/32*

U.S. Cl. 292—263 **3 Claims**

1. A lockable extension device for use with an automobile having a trunk or deck compartment member and a hinged trunk lid member shiftable between an open position and a locked compartment sealing position, one of said members including a key actuated latch bolt and the other said member including a generally horizontally disposed strike adapted to be coupled with said latch bolt, said device comprising a rigid strut member, extension means on said strut member for axially extending and contracting said strut member, pivot means including a first pivot joint adjacent one end of said strut member, a second pivot joint adjacent the other end of said strut member, said pivot joints having parallel pivot axes normal to the longitudinal axis of said strut for enabling articulation of said member in a single plane, clamp means at the lower end of said strut member adapted to be engaged with said strike responsive to tilting movements of said strut member in a direction normal to the plane of articulation of said strut member and to be fixedly connected against removal from said strike when said strut member is disposed in a vertical plane, latch bolt receiver means at the other end of said strut member adapted to be lockingly engaged with said latch bolt, said latch bolt receiver means comprising a bar member disposed in an essentially vertical plane aligned with the longitudinal axis of said strut member in the applied position of said device, the connection between said latch bolt and latch bolt receiver means locking said latch bolt receiver means against movements of said strut member from a vertical plane, thereby to prevent tilting of said clamp means relative to said strike.

4,278,281

SEAL

Sigurd M. Moberg, Etlan, Va., assignor to E. J. Brooks Company, Newark, N.J.

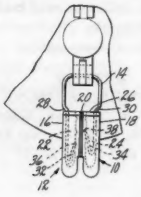
Continuation-in-part of Ser. No. 847,551, Nov. 1, 1977, abandoned. This application Feb. 1, 1979, Ser. No. 8,417

Int. Cl.[3] B65D *33/34*

U.S. Cl. 292—320 **5 Claims**

1. A seal of the padlock type, comprising a shackle and a

body having two portions, each portion having an aperture for receiving a shackle end, said shackle and said apertures being provided with cooperating means for locking the shackle ends in the apertures, said body portions being joined only by a thin flexible web portion disposed between the apertures which is



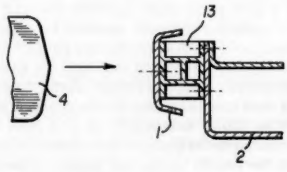
easily breakable manually, and said shackle having a medially disposed weakened portion whereby the seal may be readily released from a closure fastener with which it is installed by being separable along the easily breakable portion of the body and at the weakened portion of the shackle into two portions, each comprising a body portion and a shackle portion.

4,278,282

ELASTIC GUARD BRACES FOR ATTACHING BUMPERS TO AUTOMOBILES

Pierre Roubinet, Rueil-Malmaison, and Marcel Goupy, Saint-Cloud, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 24, 1980, Ser. No. 115,096
Claims priority, application France, Jan. 26, 1979, 79 02015
Int. Cl.³ B60R *19/04*
U.S. Cl. 293—132 **10 Claims**



1. A guard brace for the attachment of an automobile bumper to an automobile, said brace comprising in combination:

at least one relatively thick elastic element fixed to said bumper and to said automobile, said elastic guard element being oriented so that the direction of elastic deformation thereof is parallel to the direction of a force acting on said bumper; and

at least one relatively thin inelastically deformable element fixed to at least one of said at least one elastic elements:

the relative thickness of said relatively thick elastic element and said relatively thin inelastically deformable element being such that the elastic resilience of said elastic element substantially returns said bumper to an initial shape following the inelastic deformation of said inelastically deformable element,

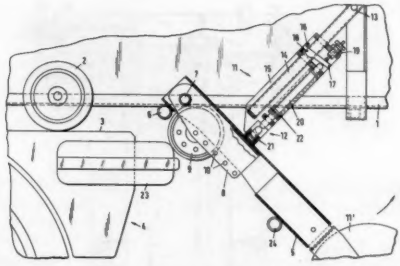
whereby said at least one inelastic element buckles to absorb the energy of said force while the elasticity of said at least one elastic element minimizes the deformation of said inelastic element.

4,278,283

LOAD TRANSPORT CARRIAGE

Karl Fels, Albert-Stolte-Str. 35, D-4290 Bocholt-Suderwick, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 52,061
Int. Cl.³ B62C *1/06*
U.S. Cl. 296—26 **8 Claims**



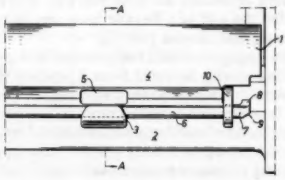
1. A load transport carriage which is carried by a truck, the load transport carriage comprising: a carriage frame; a front pair of wheels at an upper level and being journaled to the carriage frame; a lower rear pair of wheels; a pair of legs behind the front pair of wheels hingedly attached to the carriage frame at one end and holding the lower pair of wheels at the other end, the legs being pivotable and lockable in an upright position; releasable locking mechanism for holding said legs in the upright position, the legs being movable upwardly to a position in which the front wheels and the rear wheels support the load transport carriage, said locking mechanism comprising a pair of struts each adjustable in length and hinged at one end to each leg and at its other end hinged to the carriage frame behind the pair of legs, each strut including means for locking the strut against extension as the strut becomes reduced in length and being operable independently of the other strut; and feeler wheels for releasing the locking mechanism of the legs, said feeler wheels being secured to the legs adjacent their upper ends and projecting downwardly to engage the truck as the carriage frame is moved forward to swing the legs up to an upper level similar to the level of the front pair of wheels.

4,278,284

ARRANGEMENT FOR SUSPENDING A PIVOTED SIDE-BOARD

Kjell F. Ohlson, Tallmovägen 2B, 752 45 Uppsala, Sweden

Filed Jul. 18, 1979, Ser. No. 58,559
Int. Cl.³ B62D *27/00*
U.S. Cl. 296—36 **5 Claims**



1. A side-board suspension arrangement for a vehicle comprising a platform having a first end, a second end and an attachment portion including at least one upwardly-outwardly open hook,

a side-board having corresponding first and second ends and an attachment portion including at least one attachment member which is removeably coupled to said upwardly-

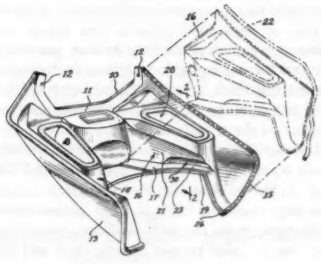
outwardly open hook such that said side-board may be removeably coupled to said platform and may be pivoted to raised and lowered positions relative to said platform, first affixation means positioned at said first end of said platform, and second affixation means positioned at said first end of said side-board and removeably coupled to said first affixation means, for providing a swinging pivot which retains said first end of said side-board at said first end of said platform while said second end of said side-board is pivoted away from said second end of said platform during attachment and removal of said side-board relative to said platform.

4,278,285

POCKETS FOR A FAIRING STRUCTURE

Kenneth W. Cummings, San Luis Obispo, and Charles M. Perethian, Arroyo Grande, both of Calif., assignors to First Champaign Corporation, Rantoul, Ill.

Filed Nov. 19, 1979, Ser. No. 95,409
Int. Cl.³ B62J *17/00*
U.S. Cl. 296—78.1 **8 Claims**



1. An improved internal pocket and support structure for a motorcycle fairing of the type having a generally concave, hollow, rearwardly opening configuration including sides which partially enclose the rider and a horizontal bottom adapted to be attached to the front portion of a motorcycle forward of the rider's position, the improved pocket structure comprising:

two independent, generally convex inner pockets, each pocket being attached around its periphery to overlapping portions of one of said sides and said bottom of said fairing thereby forming a cavity between said one concave fairing side and said convex pocket;

each said pocket being shaped such that all portions of said pocket form an angle of less than ninety degrees to a selected plane containing that portion of the periphery attached to said side.

4,278,286

DEVICE FOR MOUNTING THE MOLDING OF A BONDED TYPE WINDSHIELD

Gunji Kiba, and Hiroyuki Mizuno, both of Nai No. 2, Kiriharocho, Fujisawa-shi, Kanagawa-ken, Japan

Filed Mar. 14, 1976, Ser. No. 665,659
Claims priority, application Japan, Mar. 10, 1975, 50-31148; Dec. 19, 1975, 50-170520
Int. Cl.³ B60J *1/02*
U.S. Cl. 296—93 **10 Claims**

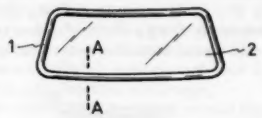
1. A device, for mounting a windshield molding of a bonded-type windshield, comprising:

(i) an interposing member including

(a) a holding portion adapted to support a windshield glass and to be secured to a window frame by a bonding agent, and

(b) a snug fit portion integrally formed with the holding portion

(ii) a fixing member including a first groove which receives said snug fit portion of said interposing member as a snug fit thereby to secure the fixing member to the interposing



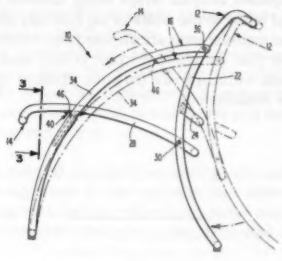
member, said fixing member including second groove means to receive and securely hold a windshield molding.

4,278,287

FOLDING SEATING PIECE

Peter W. Homestead, San Clemente, Calif., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Sep. 4, 1979, Ser. No. 72,325
Int. Cl.³ A47C *4/00*
U.S. Cl. 297—59 **3 Claims**



1. A folding seating piece including pivotally interconnected frames forming a seat, backrest and armrests; characterized in that a frame member of the seat adjacent to each side of the seating piece includes a unitary snap fastener thereon, each of said fasteners including a laterally extending guide section overlying an adjacent frame member of the seating piece for engaging, and being adapted to move along said adjacent frame member as the seating piece is being pivoted into its open position, each of said snap fasteners including a clip section that generally aligns with an additional frame member of the seating piece when its respective guide section is closely positioned to the adjacent frame member it overlies and the chair is in its desired open position, said clip section including a downwardly facing entrance orifice that is narrower than the additional frame member and an extension providing an inclined surface directly downwardly and outwardly from said entrance orifice, whereby a downard force applied to the seat directs the additional frame member along the inclined surface of the extension into the entrance orifice to cause said clip section to expand and snap around the additional frame member to which it connects.

4,278,288

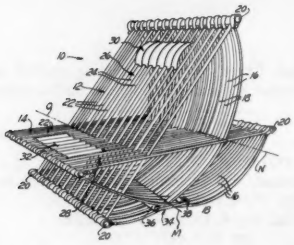
CHAIR PROVIDED WITH INTERLACING AND INTERMESHING SEAT AND BACK PORTIONS SUPPORTED BY ARCUATE SUPPORT MEMBERS

Sacha Thebaud, P.O. Box 446, Port-au-Prince, Haiti

Filed Jun. 26, 1979, Ser. No. 52,186
Int. Cl.³ A47C *5/00*
U.S. Cl. 217—118 **56 Claims**

1. A chair made of a pair of substantially identical modular units nested within each other, each of said modular units comprising at least a pair of rigid substantially parallel disposed bowed arcuate support members in the general form of a circu-

lar arc, a pair of substantially parallel cross-bar members each rigidly interconnecting said bowed arcuate members at each end, and a plurality of spaced apart substantially parallel strips of relatively thin pliable material defining chordal straps extending substantially along a chord of said circular arc formed by each of said bowed arcuate members and each attached at



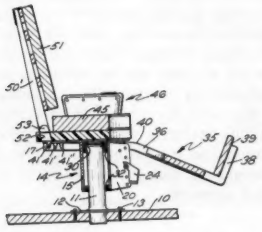
an end to one of said cross-bar members, the width of the space between adjacent chordal straps being uniform and substantially at least equal to the width of each of said chordal straps, wherein said modular units are disposed one within the other in such manner that the chordal straps of one modular unit are each disposed within a space between adjacent chordal straps of the other modular unit.

4,278,289

FISHING CHAIR

John W. Esposito, 505 Shore Acres Ave., North Kingstown, R.I. 02852

Filed Aug. 23, 1979, Ser. No. 69,123
Int. Cl.³ B63B *29/04;* A47C *7/62*
U.S. Cl. 297—188 **6 Claims**



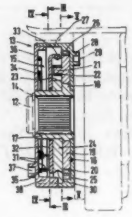
1. A fishing chair which comprises in combination a supporting column, a chair unit rotatable with respect to the column, a foot rest for said chair unit and a fishing rod butt holder, said chair unit having an integral seat plate and support means that provides an anchor for the butt holder for the fishing rod together with a support for said foot rest, said seat plate having an integral anchor for the foot rest whereby all of the forces created by a fighting fish and the forces of the fisherman whose legs push against the foot rest are concentrated on the chair unit.

4,278,290

MOTOR-DRIVEN ADJUSTABLE SEAT, PARTICULARLY A MOTOR VEHICLE SEAT

Paul Werner, Remscheid, and Willibald Strowik, Remscheid-Lennep, both of Fed. Rep. of Germany, assignors to Keiper Automobiltechnik GmbH, Remscheid, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 57,011
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1978, 2831314
Int. Cl.³ A47C *1/025*
U.S. Cl. 297—362 **20 Claims**



1. In a power driven adjustable seat, particularly a motor vehicle seat having a position adjuster including a servomotor with a driving shaft, a potentiometer coupled to the driving shaft via reduction gears, and an electronic data processing and storing device electrically connected between the potentiometer and the servomotor to store and process the measured value delivered by the potentiometer and to control the position of the seat via the servomotor, a combination comprising

a housing common both to said potentiometer and said reduction gears, the said reduction gears having an input member coupled to said driving shaft and also having an output member; and

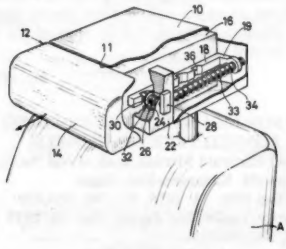
said potentiometer having a rotary slider coupled to said output member.

4,278,291

ADJUSTABLE HEADREST

Kozo Asai, 5-7, Matsuekita 7-chome, Wakayama, Wakayama, Japan

Filed Jan. 23, 1979, Ser. No. 5,866
Int. Cl.³ A47C *7/38*
U.S. Cl. 297—391 **5 Claims**



1. An adjustable headrest abutment device comprising:

(a) a housing having right and left side walls, upper and lower walls, and a rear wall, each being connected with each other to define a box-like configuration with an open front end,

(b) right and left block means restricting said open front end, said right block means being connected to said right side wall and said left block means being connected to said left side wall, said right and left block means being connected

to said upper and lower walls at the open front end of said housing,

(c) a slider means having right and left side walls, upper and lower walls each being connected with each other to define a box-like configuration, slider walls being dimensioned to slide in the restricted open front end of said housing, where the dimensions of said slider being slightly less than said restricted open front end, and a headrest means on one end of said slider means covering the open end of said housing defined by said right and left side walls and said upper and lower walls,

(d) a right side space defined by said housing right side wall, said rear wall, said upper and lower walls, said right block means and said right side wall of said slider means,

(e) a left side space defined by said housing left side wall, said rear wall, said upper and lower walls, said left block means and said left side wall of said slider means,

(f) a pair of internal slide guide bar means positioned along the direction of sliding of said slider means in said right and left spaces where one of said slide guide bar means is secured to said rear wall and to said right block means, and the other of said slide guide bar means is secured to said rear wall and said left block means,

(g) a pair of engagement locking means on said side walls of said slider means and slidably connected to said slide guide bar means to lock said slider means at a selected desired position, one of said engagement locking means being mounted to said right side wall and the other of said engagement locking means being mounted to said left side wall,

(h) means on said pair of slide guide bar means to urge said slider means in a desired direction.

4,278,292

CLAY STABILIZATION IN URANIUM LEACHING AND RESTORATION

Tsoung-yuan Yan, Philadelphia, Pa., and Wilton F. Espenscheid, DeSoto, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,400
Int. Cl.³ E21B *43/28;* E02D *3/12*
U.S. Cl. 299—5 **4 Claims**

1. In a method for the recovery of uranium from a subterranean uranium deposit containing unstable clays wherein a fresh lixiviant is introduced into said deposit via an injection system to solubilize uranium from said deposit to form pregnant lixiviant which is then produced from said deposit via a production system, the improvement comprising:

employing as at least a portion of said fresh lixiviant an aqueous solution of a carbonate leaching agent having a pH within the range of 6–10 and containing aluminum in an amount effective for the stabilization of said clays.

4,278,293

APPARATUS FOR ADVANCING A LOW-HEIGHT DRIFT THROUGH A SUBTERRANEAN STRUCTURE

Friedrich-Wilhelm Paurat, Kasselweg 29, 4230 Wesel, and Roland Paurat, Lippestr. 32, 4223 Voerde 2, both of Fed. Rep. of Germany

Filed Nov. 2, 1979, Ser. No. 90,621
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1978, 2847909
Int. Cl.³ E21C *27/24, 29/02*
U.S. Cl. 299—31 **7 Claims**

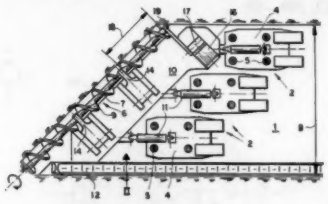
1. An apparatus for advancing a cross-cut having a roof and a floor in a subterranean structure and for excavating material from said structure with the advance of the cross-cut, said apparatus comprising:

bracing means including a plurality of bracing units spaced apart transversely of the direction in which the cross-cut is to be advanced, each of said bracing units comprising a floor-engaging shield, a roof-engaging shield and fluid pressure means for bracing said shields against said floor and said roof, respectively;

cutter means adapted to be shifted in a direction of advance relative to said bracing means and including:

an elongated support frame parallel to said shields and connected to each of said bracing units by a respective fluid-pressure cylinder arrangement, said frame being inclined to said direction of advance,

at least one cutter worm journaled on said support frame and inclined to said direction of advance, said cutter worm being formed with a generally helical formation



provided with picks engaging said structure for removing said material therefrom,

means for rotating said worm about a generally horizontal worm axis and inclined to said direction of advance, and

a plurality of arms swingable on said support frame about horizontal axes parallel to said worm axis and rotatably carrying said worm;

and

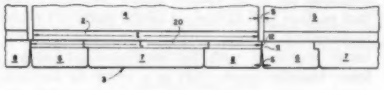
a material-removal conveyor extending into said cut past said bracing means to the region of said cutter conveyor for leading material away from said cutter conveyor, said material-removal conveyor resting upon said floor.

4,278,294

GUIDE-RAIL ASSEMBLY FOR LONGWALL MINING APPARATUS

Gert Braun, Hofackerstr. 12a, 4300 Essen-Heisingen, Fed. Rep. of Germany

Filed Nov. 9, 1979, Ser. No. 92,658
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856117
Int. Cl.³ E21C *27/34*
U.S. Cl. 299—34 **10 Claims**



1. A mining apparatus comprising:

A plurality of rail sections having longitudinally abutting rail-section ends and each having a predetermined longitudinal rail-section length, said rail sections together forming a longitudinally force-transmitting and extending guide rail having a longitudinally extending passage;

a longitudinally extending chain in said passage;

a cutter-loader displaceable along said guide rail and secured to said chain;

respective conveyor trough sections carried on said rail sections and each having a trough-section length substantially shorter than the respective rail-section length, said trough sections being longitudinally spaced by predetermined spacings so as to be out of longitudinal force-transmitting engagement with one another and together forming a longitudinally extending trough, whereby substantially all longitudinal forces are transmitted by said rail and chain; and

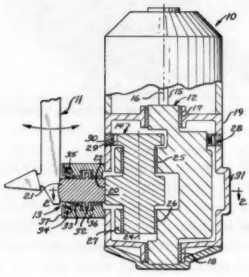
a chain conveyor extending longitudinally along said trough.

4,278,295

IMPACTING ROCK BREAKER

Delwin E. Cobb, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/01087, §371 Date Dec. 13, 1979, §102(e) Date Dec. 13, 1979
This PCT application filed Dec. 13, 1979, Ser. No. 145,065
Int. Cl.[3] E21C *27/28;* A01B *35/00*
U.S. Cl. 299—69 8 Claims



1. In an impactor (10) having fracturing means (11), a crank (12) driven rotatively about a crank axis (16), and a force transfer means (13) for reciprocatively impacting said fracturing means, improved means for hammering said force transfer means as an incident of rotation of said crank comprising:

a hammer (14) rotatively mounted to said crank (12) for concurrent revolution about said crank axis and rotation about a hammer axis (24) parallel to said crank axis, said hammer defining a rounded contacting portion (20); and

means (28) for rotating said hammer in synchronization with the crank rotation to move said contacting portion (20) reciprocatively toward and from said force transfer means (13) and cause said contacting portion (20) of the hammer (14) to impact against said force transfer means (13) with a rotational engagement free of rolling movement therebetween, said contacting portion (20) of the hammer (14) defining a right circularly cylindrical surface portion (22) engaging the force transfer means (13), said hammer surface portion (22) defining a center point (P) reciprocated rectilinearly diametrically of said crank axis (16) and in linear alignment with the rectilinear movement of said force transfer means (13) as a result of the concurrent rotation and revolution of said hammer (14) about said axes (16,24).

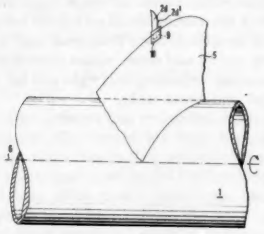
4,278,296

COAL MINING DRUM WITH ADJUSTABLE LINIER EDGE CUTTERS

Karl Bortz, Bottrop; Heinrich Thesing, Gelsenkirchen-Buer, and Friedrich Eichbaum, Velbert, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Jul. 13, 1979, Ser. No. 57,379
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1978, 2831197
Int. Cl.[3] E21C *35/18*
U.S. Cl. 299—87 16 Claims

1. In a coal winning machine having a mechanical tool, a combination comprising a tool body having a first axis about which it rotates and a surface spaced from and surrounding said first axis; at least one projecting flange on said surface helically surrounding said first axis lengthwise thereof; a plurality of cutting tools each having a linear cutting edge and a second axis; and means mounting said cutting tools on said



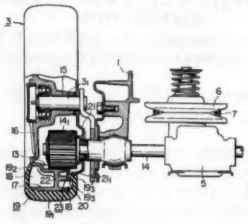
flange for assumption of the respective second axis of at least two different positions relative to said first axis, in each of which positions the linear cutting edge of the respective tool defines a different cutting angle with said first axis.

4,278,297

WHEEL FOR AN ELASTIC U-SHAPED TIRE

Hitoshi Suzuki, Kawagoe, and Masaharu Omagari, Shiki, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1979, Ser. No. 68,594
Claims priority, application Japan, Aug. 30, 1978, 53/118800
Int. Cl.[3] B60B *19/00*
U.S. Cl. 301—6 D 5 Claims



1. In a wheel for a light-weight vehicle, said wheel having an outboard side to be oriented away from said vehicle and an inboard side to be oriented toward said vehicle, the improvement comprising a central boss; a disc, substantially circular in side elevational view, extending radially outwardly from said boss and having a first part extending radially from said boss along the outboard side of said wheel, a second part, radially spaced from said boss, extending axially inboardly from said first part, a third part, radially offset outwardly from said second part, projecting in the axially inboard direction, said third part having an axially inboard free edge with a seat in it, a fourth part, intermediate the axially inboard and outboard edges of said second and third parts, extending radially outwardly, and a fifth, axially extending, rim part, on and extending both outboardly and inboardly from the radially outer edge of said fourth part, said rim part having a broad outer peripheral surface, and a tire of elastic material, asymmetrically U-shaped in transverse cross-section with an outboard side wall and an inboard side wall, the outboard side wall being higher than the inboard side wall and both side walls having peripheral brims, said tire being mounted on and around the broad outer surface of said rim, said peripheral brim of said inboard side wall being seated in the seat in the free edge of the third part of said disc.

4,278,298

BRAKING SYSTEM UTILIZING BOTH A DYNAMIC AND A MECHANICAL BRAKE

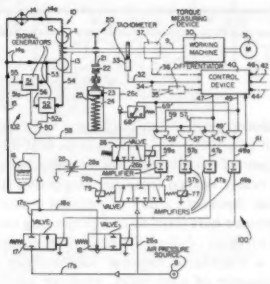
Klaus Sauka, Crailsheim, Fed. Rep. of Germany, and Horst Muschelknautz, deceased, late of Crailsheim,, Fed. Rep. of Germany (by Ingeborg Muschelknautz), assignors to Voith Turbo GmbH & Co. K.G., Fed. Rep. of Germany

Filed Jun. 1, 1979, Ser. No. 44,456

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 2824923

Int. Cl.[3] B60T *13/74;* F16F *11/00*

U.S. Cl. 303—3 14 Claims



1. A braking system for controlling the speed of a moving member, said braking system comprising:

a dynamic brake, the maximum value of the dynamic braking moment which said dynamic brake can apply to said moving member being defined by a limiting characteristic curve which varies as a function of the rotary speed of said dynamic brake;

a first control means for adjusting the dynamic braking moment said dynamic brake applies to said moving member as a function of a first adjustment signal applied thereto;

a mechanical brake;

second control means for adjusting the mechanical braking moment said mechanical brake applies to said moving member as a function of a second adjustment signal applied thereto;

signal generating means for generating an out-of-range signal when said dynamic braking moment applied to said moving member by said dynamic brake reaches said maximum value; and

central control means for generating said adjustment signals as a function of the difference between the actual value of the total braking moment applied to said moving member by both said dynamic and mechanical brakes and a desired value of the total braking moment to be applied to said moving member by both said dynamic and mechanical brakes, said central control means applying said first and second adjustment signals to said first and second control means, respectively, in such a manner that said dynamic braking moment applied to said moving member by said dynamic brake is increased or decreased when the actual value of said dynamic braking moment applied to said moving member is less than said maximum value and such that the mechanical braking moment applied to said moving member by said mechanical brake is increased or decreased only when the actual value of the braking moment applied to said moving member by said dynamic brake is equal to said maximum value.

4,278,299

PRESSURE CONTROL VALVE ASSEMBLY FOR AN AUTOMOTIVE SPLIT BRAKE SYSTEM

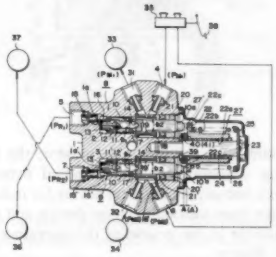
Yoshitaka Tsuda, Tokyo; Kaoru Sodeyama, Kokubunji, and Naomasa Tsunada, Hachioji, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Mar. 13, 1980, Ser. No. 129,855

Claims priority, application Japan, Mar. 20, 1979, 54-35926[U]

Int. Cl.[3] B60T *13/00*

U.S. Cl. 303—6 C 5 Claims



1. In a pressure control valve assembly for an automotive split brake system having a master cylinder and a brake cylinder, the pressure control valve assembly including a housing having a stepped bore and a wall section defining part of said bore, a differential piston slidable within said bore and having a hollow section, said hollow section cooperating with said bore to form part of a fluid passage providing communication between said master cylinder and said brake cylinder, said wall section being abuttingly engageable with said piston to determine an extreme position of same, biasing means for urging said piston into said extreme position and having a spring seat movable toward and away from said housing while bearing on said piston, and valve means mounted in said hollow section of said piston for selectively opening and blocking said fluid passage in accordance with the positions of said piston, said piston being exposed to the fluid pressures in the master cylinder and the brake cylinder and assuming its position in accordance with said fluid pressures such that the rate of the pressure increase in said brake cylinder to the pressure increase in said master cylinder is reduced when the fluid pressure in said master cylinder is increased beyond a predetermined switch-over point pressure, the improvement comprising an abutment member interposed between said housing and said spring seat at a location such that upon movement of said piston into said extreme position, said spring seat will contact said abutment member before said piston contacts said wall section.

4,278,300

HYDRAULIC BRAKING CIRCUIT FOR AN AUTOMOBILE VEHICLE

Michel Bacher, Garges-les-Gonesse, France, assignor to Societe Anonyme Francaise du Ferodo, France

Filed Jul. 17, 1979, Ser. No. 58,255

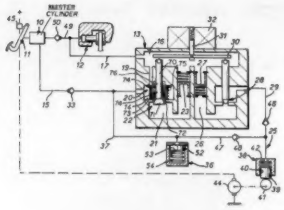
Claims priority, application France, Jul. 24, 1978, 78 21817

Int. Cl.[3] B60T *8/02, 11/28*

U.S. Cl. 303—115 11 Claims

1. A hydraulic braking circuit for a motor vehicle, said braking circuit comprising a transmitter device for transmitting brake fluid under pressure to a wheel cylinder for a wheel brake, a modulation device controlled by a pickup sensitive to the speed of rotation of the associated wheel, said modulation device comprising at least two valves including an isolation valve for normally establishing communication between said transmitter device and said wheel cylinder and a pressure drop regulation valve which when open establishes communication between said wheel cylinder and discharge means of said cir-

cuit, said discharge means in cooperation with a high pressure accumulator being operable to replace said transmitter device for transmitting fluid under pressure to said wheel cylinder during the operating cycle of said modulation device, and pump means associated with said discharge means for pumping



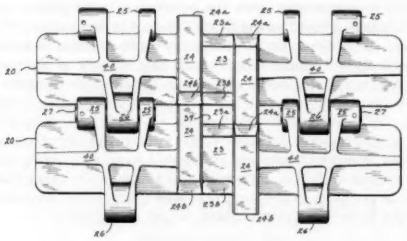
brake fluid to said high pressure accumulator, the improvement comprising a nonreturn valve disposed between said transmitter device and said modulation device for isolating said transmitter device from said modulation device and said high pressure accumulator in the course of the operating cycle of said modulation device.

4,278,301

TREAD BELT AND DRIVE HAVING INVOLUTE GEAR DRIVE

Robert A. Gregor, and Ned L. Morgan, both of New Berlin, Wis., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Continuation-in-part of Ser. No. 863,880, Dec. 23, 1977. This application Oct. 4, 1979, Ser. No. 81,776
Int. Cl.³ B22D *55/20*
U.S. Cl. 305—11 **6 Claims**



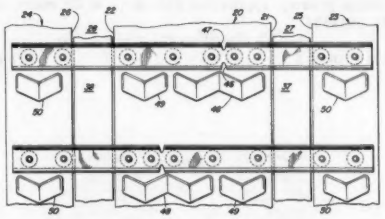
1. A tread belt link includes a link body having a ground engaging bottom surface and a top having a cog positioned medially of the link ends, said cog having fore and aft driving surfaces, a pair of longitudinally extending tumbler rim engaging surfaces on top of the link, one on each side of the cog and above the driving surfaces of the cog, one of said tumbler engaging surfaces extending from the cog forward of the main body of the link and the other extending from the cog to the rear of the main body of the link and connection fingers extending fore and aft of the main body of the link, said fingers having connecting pin receiving openings so that a plurality of links can be aligned and joined together by inserting connecting pins into the interdigited fingers of adjacent links to form an endless chain in which the tumbler rim engaging surfaces form tracks in which the spaces between the tumbler rim surfaces of adjacent links are staggered so that a tumbler rim rolling over said tracks will not pass over a space between adjacent links on both sides of the cog simultaneously.

4,278,302

GROUSER BAR TRACK ASSEMBLY FOR SNOWMOBILE

David A. Westimayer, and Stephen C. Scholten, both of Horicon, Wis., assignors to Deere & Company, Moline, Ill.

Filed Sep. 4, 1979, Ser. No. 72,153
Int. Cl.³ B62D *55/24*
U.S. Cl. 305—35 EB **9 Claims**



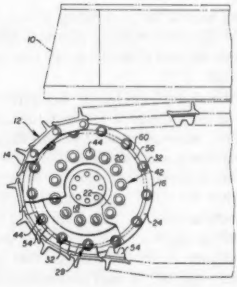
1. A continuous grouser bar track for a snowmobile comprising: a central relatively wide continuous belt having opposite edges and a pair of narrow continuous outer belts having inner edges transversely spaced from the respective opposite edges so as to define therewith a pair of parallel grooves; a series of transverse grouser bars fixed to and projecting outwardly from the external surfaces of the belts extending across the grooves and having a transverse expanse substantially equal to the transverse expanse of said belts, each of said grouser bars having predetermined flex points and successive grouser bars having their respective flex points at different transverse locations; transversely elongated surface cleats integral with and projecting from the outer surfaces of the belt assembly, said cleats being located in advance of but closely adjacent the flex points of respective grouser bars and extending transversely to opposite sides of the respective flex points so as to afford transverse stiffness to the belt at said flex points.

4,278,303

FORCE AND NOISE ISOLATING APPARATUS FOR CONTINUOUS TRACK SYSTEM

Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 909,757, May 26, 1978, abandoned. This application Oct. 23, 1979, Ser. No. 88,193
Int. Cl.³ B62D *55/12*
U.S. Cl. 305—57 **9 Claims**

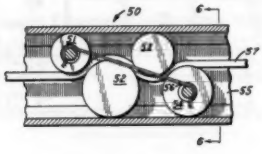


1. In a continuous track assembly **(12)** having a track **(14)** and a wheel **(16)** having a hub **(18)** and a rim **(20)** connected to the hub **(18)**, the improvement comprising:

said rim **(20)** having first and second end portions **(22,24)** and first and second spaced apart elements **(26,28)**, said second end portion **(24)** having an opening **(34)** positioned in said spaced apart elements **(26,28)**;

a drive pin (32) positioned in said opening (34) of said second end portion (24) for engaging and driving said track (14);
biasing means (30) for moving said drive pin (32) relative to said rim (20) in response to forces exerted on said drive pin (32) by said track (14); and
connecting means (42) for mounting said rim (20) on and in movable relationship relative to said hub (18), said rim (20) being movable relative to said hub (18) in response to forces exerted on said wheel (16).

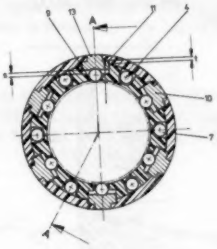
4,278,304
LINEAR BEARING DEVICES
Earl W. Traut, 8040 Palm Lake Dr., Orlando, Fla. 32811
Filed Jun. 14, 1979, Ser. No. 48,348
Int. Cl.³ F16C *29/04*
U.S. Cl. 308—6 R **1 Claim**



1. A linear rolling contact bearing comprising:
two linear surfaces,
said linear surfaces being parallel and joined to each other,
rotating means,
said rotating means including a plurality of rollers,
said rollers being located between said linear surfaces,
every other said roller being in rolling contact with one of said linear surfaces,
all other said rollers being in rolling contact with second said linear surface,
first and last of said rollers including axial extensions,
retaining means,
said retaining means being connected between said axial extensions to prevent said rollers from moving apart,
a linear actuator,
said rollers having waists upon which said linear actuator rolls,
the thickness of said linear actuator and the thickness of the waists of said rollers preventing adjacent said rollers from contacting each other.

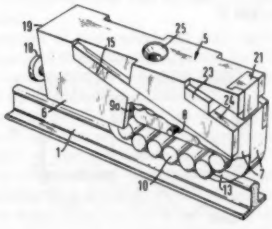
4,278,305
LINEAR MOTION BEARING
Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim; Lothar Walter, Schweinfurt, and Horst M. Ernst, Eltingshausen, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Nov. 19, 1979, Ser. No. 95,225
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855199
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C **6 Claims**

1. In a linear motion bearing operable with a central shaft, the bearing including an outer sleeve with a bore surface, a cylindrical cage situated within said bore and having an outer surface adjacent said bore surface, a plurality of rolling elements formed in endless rows distributed circumferentially around said cage, said cage defining for each endless row a main guideway for loaded rolling elements, a return guideway for nonloaded rolling elements, and reversing zones connecting the ends of said guideways, and a race plate having an inner side adjacent and engaging the rolling elements in each of said main guideways and an opposite outer side; the improvement wherein said outer sleeve bore surface defines therein a depression extending radially outward for accommodating each of said race plates, said cage defines in its outer surface a recess extending radially inward, being coextensive with a main guideway, and defining a floor for receiving a race plate, each race plate being positionable in a radially inward position where it engages at least in part the floor of a recess while its outer surface does not extend radially beyond the cage's outer surface, and each race plate also being movable radially out-



ward to an outward position where it extends radially into one of said depressions by a depth t therein with a clearance depth s defined between the race plate's inner surface and said recess floor, depth s being at least as great at depth t whereby said cage and race plates in their inward positions are axially insertable into said bore until each recess is adjacent one of said outer sleeve depressions, and whereby said race plates in their outward positions permit said rolling elements to be inserted between each race plate's inner surface and said central shaft.

4,278,306
LOAD SUPPORTING ROLLER ASSEMBLIES
Jack E. Douglas, Walsall, and Richard J. Bigley, Telford, both of England, assignors to Arthur Shaw Manufacturing Limited, West Midlands, England
Filed Jan. 17, 1980, Ser. No. 112,743
Claims priority, application United Kingdom, Jan. 24, 1979, 02556/79
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C **2 Claims**



1. A roller assembly for mounting on an element for sliding movement on a rail, said assembly comprising:
a roller housing having two complementary parts, each said part being formed with a respective complementary groove of oval configuration defining an oval continuous path;
a plurality of short rollers of right-cylindrical configuration located in said housing for rolling movement along and around said path with their opposed ends each being located in said respective complementary groove; and
an elongate slot in said housing opening to a substantially linear portion of said path whereby a plurality of rolling contact faces being central portions of said short rollers are presented for rolling engagement with said rail in use.

4,278,307
CAGE FOR A ROLLING BEARING

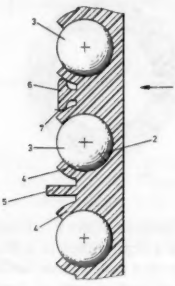
Armin Olschewski; Heinrich Kunkel, both of Schweinfurt; Manfred Brandenstein, Aschfeld, and Rainer Schurger, Schwanfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jun. 26, 1978, Ser. No. 919,364

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1977, 2731584

Int. Cl.³ F16C *33/41*

U.S. Cl. 308—201 **16 Claims**



1. In a rolling bearing cage with pockets for receiving rolling elements, in which the rolling elements are held by spreadable holding projections, the holding projections being elastic and having recesses for receiving the rolling elements the improvement comprising spreadable cage portions on said cage between the holding projections of pairs of adjacent cage pockets said cage portions being positioned to be spreadable to positions for supporting the adjacent holding projections of the cage after the insertion of the rolling elements, to inhibit separation of said cage from said rolling elements.

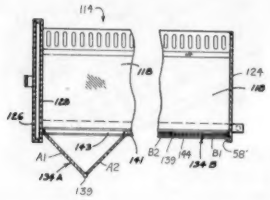
4,278,308
DRAWER ASSOCIATING CONSTRUCTION

John Gotberg, Franklin, Mich., assignor to Gotbert Patent Company, Farmington Hills, Mich.

Filed Oct. 6, 1978, Ser. No. 949,076

Int. Cl.³ A47B *88/00*

U.S. Cl. 312—330 R **50 Claims**



1. A drawer, having:

two opposed side walls, an upstanding front wall and an upstanding rear wall, and

a trap-door floor constituted by at least one floor section hingedly secured along an outer edge thereof to a respective one of said upstanding walls,

the aforementioned hinged securement being provided by hinge means which permit said at least one floor section, unless otherwise releasably held up in a generally horizontal relation for use as a bottom wall for said drawer, to hang down below said upstanding walls;

ganging means on said trap door floor, operable only when said bottom wall is hanging down below said upstanding walls, for connecting said drawer, as an upper drawer, with an underlying drawer, so that said upper drawer if pulled-out and pushed-in will cause the underlying drawer to be correspondingly pulled-out and pushed-in and so that said upper drawer, in effect then operates as an upward wall extension means of the underlying drawer to make the underlying drawer effectively deeper.

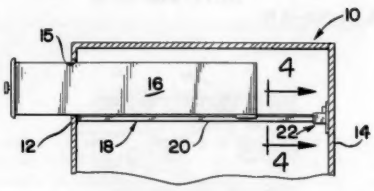
4,278,309
ALIGNMENT BRACKET FOR DRAWER-GUIDE SYSTEMS

Sebastian E. Dreiling, 2040 Conejo La., Fullerton, Calif. 92633

Filed Dec. 31, 1979, Ser. No. 109,228

Int. Cl.³ A47B *88/00*

U.S. Cl. 312—343 **4 Claims**



1. A bracket assembly for aligning drawer-guide systems comprising:

a first rear-bracket member adapted to be fixedly secured to a fixed drawer-support structure, said first bracket member including a recess vertically disposed in the rear surface thereof, and a slot vertically disposed on the front surface thereof centrally positioned with respect to said recess and communicating therewith, to allow vertical adjustment of said bracket assembly;

a second front-bracket member adapted to be selectively coupled and positioned relative to said first bracket member, said second bracket member including a slot horizontally disposed therein and positioned to be juxtaposed with said slot of said first bracket member, thereby allowing said second bracket to be fixedly positioned vertically, horizontally, or angularly, with respect to said first fixed bracket;

a socket member integrally formed on said second bracket member for adjustably mounting a guide-track member; and

a nut member adapted to be movably received in said recess of said first bracket member, having a threaded securing member adapted to be received in said slots to engage said nut member, whereby the simple tightening of said threaded securing member locks said second bracket member in aligned placement with respect to said drawer-guide systems.

4,278,310
METHOD OF MAKING A PERCUSSIVELY-IGNITED PHOTOFLASH LAMP

John F. Waymouth, Marblehead; Andre C. Bouchard, Peabody; Richard A. Fowler, Ipswich, and Harold H. Hall, Jr., Marblehead, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 893,223, Apr. 4, 1978, Pat. No. 4,201,540. This application Dec. 5, 1979, Ser. No. 100,590

Int. Cl.³ H01J *9/395*

U.S. Cl. 316—24 **11 Claims**

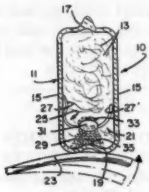
1. A method of making a percussively-ignited photoflash lamp said member comprising:

providing a light-transmitting envelope having at least one open end;

positioning a quantity of filamentary combustible material within said envelope;

disposing a percussively-actuated ignition means including a

resilient member located between opposed walls of said envelope for engagement therewith, and a quantity of primer material located on said resilient member in contact with an internal surface of the wall of said envelope to receive the percussive force within said envelope through said open end, said ignition means adapted for



igniting said filamentary combustible material in response to the application of a percussive force to the external surface of said envelope;

providing a combustion-supporting atmospheric within said envelope;

hermetically sealing said open end of said envelope.

4,278,311

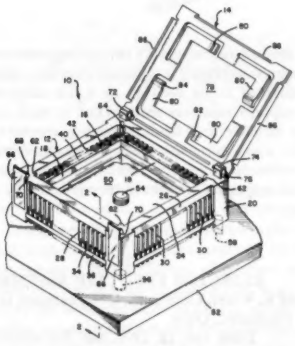
SURFACE TO SURFACE CONNECTOR

William S. Scheingold, Palmyra, and Frank C. Youngfleish, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 27,567, Apr. 6, 1979, Pat. No. 4,220,383, which is a continuation-in-part of Ser. No. 971,629, Dec. 20, 1978, abandoned, which is a continuation of Ser. No. 851,338, Nov. 14, 1977, abandoned. This application Jan. 21, 1980, Ser. No. 113,926

Int. Cl.³ H01R *23/72*

U.S. Cl. 339—17 CF **1 Claim**



1. An electrical connector for electrically connecting a semi-conductor chip carrier or the like to a printed circuit board, comprising:

a. a frame of insulating material having four sidewalls defining a central carrier-receiving compartment, each sidewall containing a plurality of conductive, contact-carrying spring members adapted to provide an electrical path between the semi-conductor chip carrier which may be positioned in the central compartment and the printed circuit board on which the frame may be mounted said frame further having a U-shaped hinge invertedly mounted at each end of one side with a first leg inserted into the frame and the second leg spaced outwardly therefrom; and

b. a cover, formed from a spring material and having an opening at each end of one edge through which the second legs on the hinge may slide for hingedly mounting the cover to the frame and adapted to close over the top thereof, the cover further having an opening in the center with a plurality of L-shaped spring fingers integrally attached to and positioned around the edges of the opening such that each finger is attached to an edge and extends around a corner with the free ends being parallel to an adjacent edge, said free ends adapted to bias a carrier which may be positioned in the central compartment downwardly against the contact-carrying spring members when the cover is closed over the top of the frame.

4,278,312

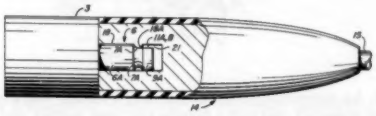
SAFETY PLUG FOR ARC WELDER CONNECTORS

Albert L. Buffa, 121 La Canada, Goodyear, Ariz. 85338

Filed Nov. 13, 1979, Ser. No. 93,067

Int. Cl.³ H01R *3/00*

U.S. Cl. 339—38 **3 Claims**



1. A safety device for preventing electrical shorting of a female connector of an arc welding machine, the female connector including

i. a conductive core electrically connected to the arc welder by means of a flexible cable, the conductive core having an exposed end, a cylindrical hole for receiving a male connector being disposed in the exposed end of the conductive core, a chord member being disposed in the cylindrical hole a predetermined distance from the exposed end of the conductive core of the cylindrical hole,

ii. a layer of electrically insulative material covering all of the conductive core except the exposed end, the electrically insulative material having an edge surface which is approximately coplanar with the exposed end of the female connector,

said safety device comprising in combination:

(a) a cylindrical shaft for insertion into the cylindrical hole of the conductive core, said cylindrical shaft having a main section;

(b) a tip portion of said cylindrical shaft, said tip portion being separated from the main portion by a circumferential groove disposed in said shaft, said tip portion being bounded by a semicylindrical surface and by a first plane approximately parallel to a cylindrical axis of said cylindrical shaft, said first plane passing approximately through the bottom of said circumferential groove for allowing said tip portion to move past the chord member; and

(c) an insulative body attached to said cylindrical shaft, said insulative body covering the exposed end of the female connector when said cylindrical shaft is inserted sufficiently far into said cylindrical hole that said circumferential groove is aligned with said chord member, said insulative body and said cylindrical shaft being integrally formed of a unitary piece of insulative material, the distance from said insulative body to an edge of said circumferential groove being substantially equal to said predetermined distance, a shaft receiving hole being disposed in an end of said insulative body opposite to the end thereof from which said cylindrical shaft extends, said shaft receiving hole being capable of receiving an entire cylindrical shaft of another safety device idential to said safety device to allow nesting of a plurality of said safety devices;

said safety device being rotatable with respect to the female connector to cause the chord member to engage said circum-

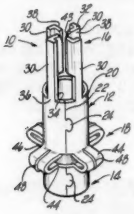
ferential groove, locking the safety device to the female connector.

4,278,313

ELECTRICAL CONTACT WITH LOCKING DEVICE

Roland F. Blakesley, Canton, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 12, 1979, Ser. No. 74,637
Int. Cl.³ H01R *13/28, 13/428*
U.S. Cl. 339—49 R **12 Claims**



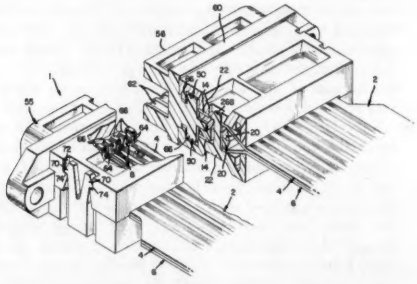
1. An electrical contact comprising a tubular body having a wire receiving end and a mating end, said mating end having plural contact fingers extending axially of the body, each contact finger having a substantially flat radially inwardly extending blade terminating in bevelled edges which form a wedge, the spacing between the bevelled edges of adjacent blades being about the same size and shape as a blade at its bevelled edge, the bevelled edges of each of said blades of said contact being adapted to mate with like bevelled edges of an identical contact with the mating end of said contact being axially inserted into the mating end of said identical contact with the bevelled edges of said contact wedging between and against adjacent bevelled edges of the blades of the identical contact.

4,278,314

CONNECTOR ASSEMBLY FOR FLAT CABLE CONDUCTORS IN MULTIPLE ROWS

Jesse L. Moser, Highpoint, and John R. Shoemaker, Reidsville, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 31, 1979, Ser. No. 89,834
Int. Cl.³ H01R *9/07*
U.S. Cl. 339—99 R **6 Claims**



1. A connector for flat cable conductors, comprising:

an inner connector body of all plastic construction assembled with an outer connector body of all plastic construction,

a flat cable having a row of flat conductors clamped between said bodies, said cable having a row of first windows alongside said flat conductors,

an electrical connector having a row of electrical contacts providing slotted plate electrical terminals separated by partitions,

said outer body having stuffer means supporting the conductors of said cable and pressing said conductors into said slotted plate terminals upon assembly of said outer body over said partitions and said terminals, said partitions entering said first windows,

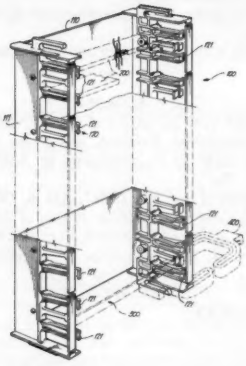
said cable having second windows, and means on at least one of said bodies passing through said second windows and frictionally engaging the other of said bodies to clamp said bodies together over said cable.

4,278,315

SYSTEM FOR INTERCONNECTION OF MULTIPLE INSULATED WIRES

Brian T. Osborne, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 20, 1979, Ser. No. 55,217
Int. Cl.³ H01R *9/00*
U.S. Cl. 339—113 B **7 Claims**



1. A module for releasably supporting a plurality of connector blocks comprising a channel-like base member of sheet metal adapted to be secured to a flat surface, two molded plastic support members secured one to each side of the channel-like member and having fanning apertures for inserting wires for connection to connector blocks releasably held between said support members across said base member by means of paired, opposite, cantilever spring retainers in said support members.

4,278,316

REJECTOR FUSE CLIP ASSEMBLY

Raymond R. White, Cincinnati, Ohio, assignor to Ilsco Corporation, Cincinnati, Ohio

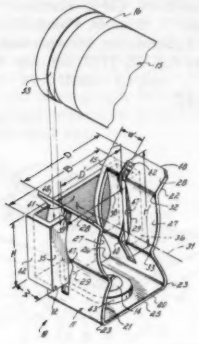
Filed Apr. 21, 1976, Ser. No. 678,977
Int. Cl.³ H01C *1/02*
U.S. Cl. 339—258 R **7 Claims**

1. A rejector fuse clip assembly comprising:

a fuse clip having opposed spring legs, each of said spring legs defining a vertically oriented slot; and

a rejector clip having opposed ears located in coplanar, but separate, relation one with the other, one of said coplanar ears being receivable in each of said vertically oriented slots, and having connector structure rigidly connecting said ears one with the other, said connector structure partially surrounding said fuse clip exteriorly thereof to positively limit outward movement of said fuse clip spring legs beyond a specified point, and said connector structure cooperating with said ears to establish an open-ended slot between said ears, said ears and connecting structure collectively operating to prevent, independently of said

fuse clip legs, insertion of a nongrooved fuse terminal between said fuse clip legs, said fuse clip legs contributing



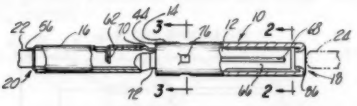
nothing to said nongrooved fuse terminal insertion prevention.

4,278,317

FORMED SOCKET CONTACT WITH REENFORCING RIDGE

David O. Gallusser, Oneonta; David L. Frear, Binghamton, and Charles P. Fischer, Sidney, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 31, 1979, Ser. No. 71,638
Int. Cl.³ H01R *11/22*
U.S. Cl. 339—258 R **5 Claims**



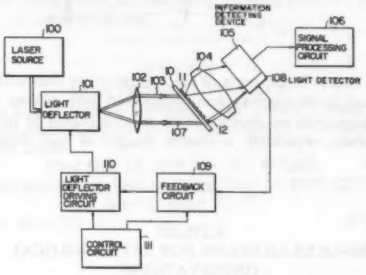
1. In a separable electrical connector of the type including first and second connector members, one of said members being a receptacle and the other being a plug adapted to mate with the receptacle, each of said members including a dielectric insert, at least one socket contact mounted in the insert, at least one socket contact mounted in the insert of one member, the socket comprising a contact sleeve of resilient metal and having a mating end and a wire receiving end, a pin contact corresponding to the socket contact and being mounted in the insert of the other member and adapted for telescopic engagement with the mating end of the socket contact when the plug and receptacle are in mated relationship, the improvement wherein the wall of said contact sleeve defines plural slots extending axially from the mating end thereby providing plural contact fingers with each contact finger extending as a cantilever beam from its root in the contact sleeve adjacent the ends of the slots and terminating at a free end, each of said fingers including a radially inwardly directed ridge which extends axially of the respective contact finger whereby each contact finger is stiffened by said ridge, each ridge on each respective contact finger extending from a point spaced from the free end of the contact finger to a point past the ends of said slots, each free-end of said contact finger being inwardly concave for engaging said pin, the ridge deflecting so that it is positioned laterally opposite of the inserted pin and out of contact therewith.

4,278,318

HOLOGRAPHIC RECONSTRUCTING APPARATUS

Yoshikazu Nakayama; Fumikazu Tateishi, both of Hirakata, and Katsuyuki Fujito, Higashiosaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 18, 1978, Ser. No. 970,439
Claims priority, application Japan, Dec. 19, 1977, 52-153232; Sep. 14, 1978, 53-113166
Int. Cl.³ G03H *1/30*
U.S. Cl. 350—3.78 **13 Claims**



1. A holographic reconstructing apparatus comprising
(a) a laser beam source,
(b) a hologram memory plate containing at least one hologram group, each group including a number of holograms,
(c) means for dividing a laser beam into a plurality of laser beams provided near said hologram group,
(c) an optical means including a light deflector normally directing said laser beam to a selected hologram of said group and intermittently directing said laser beam to said dividing means,
(e) means for intermittently controlling said light deflector to temporarily cause said light beam to be directed to said dividing means instead of said selected hologram,
(f) a light detecting means including a plurality of light detecting elements for respectively receiving the laser beams divided by said dividing means,
(g) means responsive to the output of said light detecting means for controlling said light deflector to correct the position of said laser beam to a predetermined desired position relative to said dividing means, whereby the light flux from said laser beam is accurately directed to a selected hologram when a selected hologram is irradiated, and
(h) means for detecting the information from a selected irradiated hologram.

4,278,319

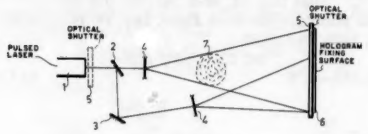
PROCESS AND APPARATUS FOR THE DETERMINATION OF THE PHYSICAL CHARACTERISTICS OF DISPERSED SYSTEMS BY HOLOGRAPHY

Judit Timko born Jozsa; Tibor Blickle; Oszkar Borlai, all of Budapest, and Aurel Ujhidy, Veszprem, all of Hungary, assignors to Magyar Tudomanyos Akademia Muszakikemiai Kutato Intezete, Hungary

Filed Feb. 14, 1979, Ser. No. 12,112
Int. Cl.³ G03H *1/30*
U.S. Cl. 350—3.78 **1 Claim**

1. In an in-line holographic method for the examination optically of at least partially transparent dispersed systems, in which a dispersed system is trans-illuminated by a laser beam and the through-going laser beam is directed to a surface region of a photosensitive recording means, the improvement being characterized by the steps of producing a reference laser beam from the trans-illuminating laser beam before it passes through said dispersed system, directing said reference laser beam directly to a portion of said surface region, optically recording the resulting interference pattern on said surface

region, whereby said surface region comprises an off-line holographic record of said dispersed system in said portion in which both the through-going and the reference laser beams are recorded and an in-line holographic record of said dispersed system in the parts of said region other than said portion; and reconstructing said in-line and said off-line holographic records on disjunct fields of said region to provide appropriate, separately evaluable images of said dispersed system.

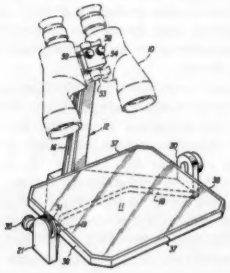


4,278,320

BINOCULAR STAND FOR ASTRONOMICAL OBSERVATIONS

Emmanuel M. Carreira, Sr., University Heights, Ohio, assignor to Thomas A. Dobbins, Lyndhurst, Ohio

Filed Nov. 28, 1979, Ser. No. 98,245
Int. Cl.³ G02B *23/18*
U.S. Cl. 350—26 **5 Claims**



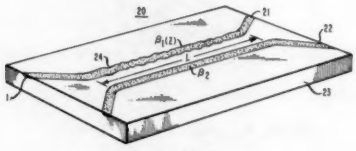
1. A portable optical instrument for astronomical observations, comprising in combination:
a binocular;
a base for providing a substantially stable, horizontally extending platform;
a strut attached to the base and extending upwardly therefrom;
obliquely extending clamp means positioned at the top of the strut for retaining the binocular on the strut at an oblique angle with respect to the strut and the horizontal extent of the base;
mirror support means secured beneath said obliquely extending clamp means;
a mirror secured to said mirror support means with the reflecting surface of the mirror facing upwardly and being intersected by the optical axes of the binocular when the binocular is secured to the clamp, and
an uninterrupted space between the reflecting surface and the binocular,
whereby, the base is horizontally disposed with respect to a stable surface, the binocular secured by the oblique clamp is disposed at an oblique angle with respect to the vertical and the mirror reflects astronomical observations through the binocular without an observer having to support the binocular and with the observer having his hands free.

4,278,321

POWER DIVIDER WITH RANDOMLY VARYING INCREMENTAL POWER TRANSFER

Iris M. Mack, Berkeley, Calif.; Harrison E. Rowe, Rumson, N.J., and Ronald V. Schmidt, Woodside, Calif., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 28, 1979, Ser. No. 80,092
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.12 **7 Claims**



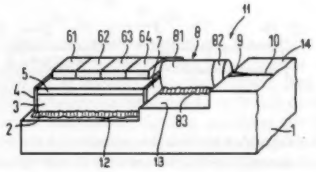
1. A power divider comprising:
at least two coupled wavepaths (**21**, **22**) (**40**, **41**);
CHARACTERIZED IN THAT:
a parameter of at least one of said coupled wavepaths varies randomly as a function of distance along said wavepaths.

4,278,322

COUPLING DEVICE FOR COUPLING OF TWO WAVEGUIDES

Hans F. Mahlein, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 6, 1979, Ser. No. 45,946
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1978, 2828802
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.18 **10 Claims**



1. A coupling device for coupling two optical waveguides having different cross sections, in particular for coupling a layer conductor to a strip conductor, said device comprising a telescope system of lenses for narrowing the beam cross section of an incident light and a tapering optical waveguide being positioned to receive the light emerging from said system and having a decreasing cross section extending away from said means.

4,278,323

OPTICAL FIBER SLIP RING

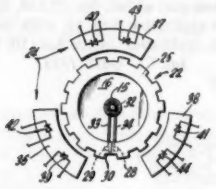
Steven B. Waldman, Morganville, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 12, 1979, Ser. No. 11,279
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.20 **11 Claims**

1. A system for communication of signals from a moving member to a relatively fixed member, including:
a hollow rotatable tubular support means connected to said moving member to be movable therewith,

drum means mounted coaxially on said tubular support means for rotation therewith,

an optic fiber ring mounted on said drum to communicate light signals, said optic fiber ring including a plurality of periodic alternating projections and spaces formed in the surface of said ring and distributed around the outer circumference, an optic fiber block means secured to said fixed member and positioned around and proximate to said optic fiber ring and forming a gap between said optic fiber block means and said projections on said outer circumference of said optic fiber ring,



a first solid state electronic-photo transducer means connected to said optic fiber block means and a second solid-state electronic-photo transducer means connected to said optic fiber ring,

first means for communicating signals through said hollow tubular support means to said fiber optic ring transducer means, and second means for communicating signals to said fiber optic block transducer means, said first and second transducer means being adapted to communicate across said gap by light signals.

4,278,324

ADJUSTABLE MOUNT FOR OPTICAL COMPONENTS

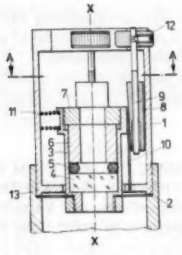
Lothar Zipfel, JENA, 2, Werner-Seelenbinder-Str., District of Gera, German Democratic Rep.

Filed Oct. 22, 1979, Ser. No. 84,529

Claims priority, application German Democratic Rep., Oct. 31, 1978, 208776

Int. Cl.³ G02B *7/00*

U.S. Cl. 350—288 **2 Claims**



1. An adjustable mount for optical components, particularly for use in laser arrangements, including a tightly sealed optical component comprising

an outer tube,

an interior tube coaxially arranged within said outer tube,

a spring disc,

said interior tube supporting said optical component in encompassing the latter, said spring disc for pivotally seating said interior tube in said outer tube,

an optical axis, coinciding with the tube axes of said interior and outer tube,

two wedges, each having two wedge faces,

two guide springs,

two spindles, each being seated in the wall of said outer tube, said two wedges being arranged between said outer tube and said interior tube staggered at right angles to each other, said two wedges being frictionally connected via the one of said two wedge faces and via said guide springs to the outer wall of said interior tube and with the other of said wedge faces to the interior wall of said outer tube,

said two wedges being provided with a means for receiving said two spindles,

said two wedges being displaced by operation of said two spindles in parallel to said optical axis,

said interior tube axis including an angle with the optical axis when displaced.

4,278,325

ELECTRONIC TIMEPIECE

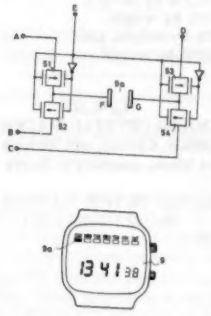
Kenichi Kondo; Ryuichi Kuronuma, and Noboru Kaneko, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Dec. 11, 1978, Ser. No. 967,980

Claims priority, application Japan, Dec. 12, 1977, 52/149495

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—331 T **3 Claims**



1. In an electronic timepiece having a liquid crystal display including liquid crystal display electrodes and a dynamic driving circuit for producing a display driving signal having an effective driving voltage to drive the liquid crystal display electrodes to display time information, the improvement wherein the dynamic driving circuit comprises means for producing a periodic sampling signal defining a periodic sampling period, means including at least some of said liquid crystal display electrodes used to display time information for detecting the capacitance of the liquid crystal in response to the periodic sampling signal to sense a change in ambient temperature only during the sampling periods, and means for adjusting the effective driving voltage of the display driving signal in response to changes in the detected capacitance corresponding to changes in the ambient temperature to thereby compensate for temperature changes.

4,278,326

LIQUID CRYSTAL DISPLAY ELEMENT

Hiromitsu Kawamura; Tokuyoshi Nakajima; Yoshimichi Shibuya, all of Mobara, and Hisao Yokokura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 28, 1978, Ser. No. 973,814

Claims priority, application Japan, Mar. 15, 1978, 53-28704

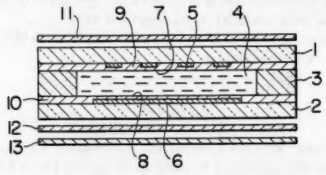
Int. Cl.³ G02F *1/133*

U.S. Cl. 350—343 **8 Claims**

1. In a liquid crystal display element comprising two electrode substrates, each of which is a transparent substrate, an electrode having the desired patterns formed on the inner surface of at least one of said transparent substrates, and a liquid crystal molecule orientation controlling film formed on

the inner surface of said electrode, said two electrode substrates being placed in parallel with a certain distance therebetween and sealed therearound by a sealant, and a nematic liquid crystal being enclosed in the space thus produced, the improvement which comprises using as the liquid crystal molecule orientation controlling film a film of a polymer having imide rings and as the sealant a calcined product of low-melting point glass obtained by adding 1 to 5 parts by weight of either SiO_2 or Al_2O_3 or both of SiO_2 and Al_2O_3 to 100 parts by weight of a base composition comprising:

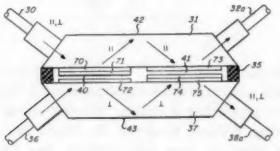
B_2O_3—7.5–14.5% by weight,
PbO —71.5–81.2% by weight,
ZnO —0–14.0% by weight,
CuO —0–3.0% by weight, and
Bi_2O_3—1.5–3.0% by weight.

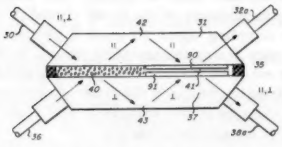


4,278,327
LIQUID CRYSTAL MATRICES

Donald H. McMahon, Carlisle, and Richard A. Soref, Newton Centre, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Nov. 26, 1979, Ser. No. 97,294
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—347 V **39 Claims**





1. An optical switching matrix comprising:

first port means for propagating an input light beam having components in first and second linearly polarized states so as to intersect, at a predetermined angle and at a first location, a confined layer of electrooptically active nematic material for reflection of said first polarized state component and for transmission therethrough of said second polarized state component for forming respective second and third divergent light beams,

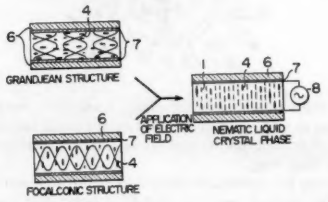
polarization converter means for interchanging the respective polarizations of said respective second and third divergent light beams, and

reflector means for redirecting said second and third light beams so as to intersect, at said predetermined angle and at a second location, said confined layer for redirecting said second and third light beams to form a combined light beam, said combined light beam propagating through second port means in substantially the same direction as said input light beam.

4,278,328
GUEST-HOST LIQUID CRYSTAL DISPLAY DEVICE

Akio Mukoh, Hitachi; Hidetoshi Abe, Katsuta; Hideaki Kawakami, Mito; Yoshiharu Nagae, Hitachi; Hirosada Morishita, Hitachi, and Eiji Kaneko, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 27,839, Apr. 6, 1979, abandoned. This application Aug. 15, 1980, Ser. No. 178,598
Claims priority, application Japan, Apr. 10, 1978, 53-41183
Int. Cl.³ G02F *1/137*
U.S. Cl. 350—349 **11 Claims**



1. A guest-host liquid crystal display device having a guest-host liquid crystal layer sandwiched between a pair of substrate each provided with an electrode for applying an electric field to said liquid crystal layer, in which said electrode and said substrate include surfaces in contact with said liquid crystal layer being subjected to a perpendicular orientation treatment for orienting liquid crystal molecules in contact with said surfaces of said electrode and said substrate with longitudinal axes thereof perpendicular to said surface of said electrode; and said liquid crystal layer includes

(a) a nematic liquid crystal having a positive dielectric anisotropy,

(b) an optically active material for imparting to said nematic liquid crystal a phase transition into a cholesteric condition, and

(c) a pleochroic dye for absorbing light incident on said liquid crystal layer in the absence of an electric field applied to said liquid crystal layer;

wherein a pitch of said cholesteric condition is substantially equal to the thickness of said liquid crystal layer.

4,278,329
ELECTROCHROMIC DEVICE WITH TRANSMISSIVE COUNTER ELECTRODE

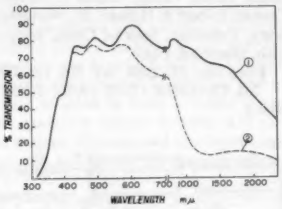
Kenzi Matsuhiro, Sagamihara, and Yasushi Masuda, Yamato, both of Japan, assignors to Ashai Glass Company, Ltd., Tokyo, Japan

Filed Jun. 5, 1979, Ser. No. 45,664
Claims priority, application Japan, Jun. 20, 1978, 53-73741; Jun. 20, 1978, 53-73742; Jun. 30, 1978, 53-78723
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 **6 Claims**

1. In an electrochromic device comprising two transparent substrates, each having formed thereon a transparent conductive film which face each other; first and second electrochromic films which are formed on the transparent conductive films; an electrolyte containing ions capable of changing the optical properties of the electrochromic film and a sealant for sealing the electrolyte between the two substrates, wherein the improvement comprises:

said first electrochromic film being formed of a substance whose optical properties in the range of visible light

change in response to the injection and extraction of said ions; and



said second electrochromic film being formed of a substance whose optical properties in the range of visible light do not change in response to the injection and extraction of said ions.

4,278,330

CATADIOPTRIC VIRTUAL-ZOOM OPTICAL SYSTEM

Richard A. Buchroeder, Tucson, Ariz., assignor to Applied Systems Corporation, Vienna, Va.

Filed May 14, 1979, Ser. No. 38,953
Int. Cl.³ G02B *15/16, 17/08*
U.S. Cl. 350—411 **15 Claims**

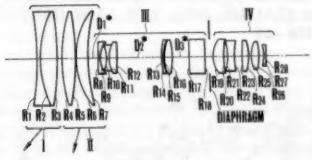
1. A zoom optical system comprising a main light gathering objective mirror and a virtual object zoom relay system optically coupled to said main light gathering objective mirror.

4,278,331

PHOTOGRAPHIC OBJECTIVE WHICH PREVENTS VARIATION IN ANGULAR FIELD OF VIEW DURING FOCUSING

Kazuo Tanaka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1979, Ser. No. 93,989
Claims priority, application Japan, Nov. 17, 1978, 53-141807
Int. Cl.³ G02B *15/18*
U.S. Cl. 350—411 **3 Claims**



1. A photographic objective comprising:

a focusing lens group arranged at the front thereof and including at least two lens members movable for focusing independently of each other;

a lens group arranged to the rear of said focusing lens group and stationary during focusing; and

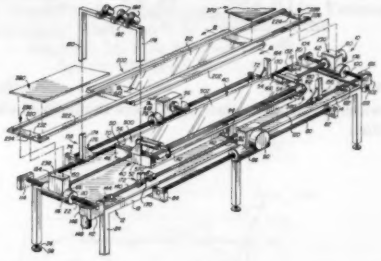
said focusing lens group having focusing means and means for preventing variation of the angular field of view of said objective during focusing.

4,278,332

TABLE APPARATUS FOR HOLDING AND MOVING CELS FOR PRODUCING ANIMATED MOTION PICTURES

Joshua Eliscu, Tucson, Ariz., assignor to Elisola Enterprises, Inc., Tucson, Ariz.

Filed Jun. 5, 1979, Ser. No. 45,784
Int. Cl.³ G03B *21/32*
U.S. Cl. 352—87 **26 Claims**



1. Table apparatus for holding and moving animation cels and background or filler for the cels, comprising, in combination:

table means, including a bed and a plurality of legs supporting the bed;

slide box means secured to the table means and movable relative to the bed, including

a slide box,

first shaft and support means secured to the table means for supporting the slide box and for moving the slide box in a first direction relative to the bed,

second shaft and support means secured to the table means for supporting the slide box and for moving the slide box in a second direction relative to the bed.

fixed rail means secured to the first shaft and support means and movable with the slide box in the second direction for holding a cel;

light box means secured to the slide box and to the fixed rail means and movable with the slide box and the fixed rail means in the second direction and movable with the slide box relative to the fixed rail means in the first direction, including,

a frame,

a lamp chamber secured to the frame, and lamp means in the lamp chamber for providing illumination; and

movable rail means secured to the light box means, and including a pair of rails spaced apart from each other and disposed adjacent and parallel to the fixed rail means, and movable relative to each other and to the light box means, for holding and moving cels.

4,278,333

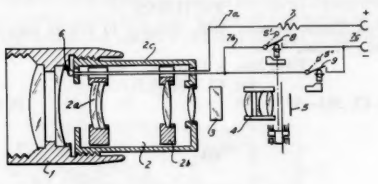
CAMERA WITH ACTION INDICATOR

Johann Roth, Schwabhausen, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,851
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853942
Int. Cl.³ G03B *1/60*
U.S. Cl. 352—170 **11 Claims**

1. In a camera having a shutter, particularly a motion-picture camera, a combination comprising a picture-taking objective including lens means; a light-source mounted in said objective and viewable through said lens means at least from the front of the camera; an electrical circuit connecting said light source

with a source of energy; and means cooperating with a movable camera-mechanism component, for completing said elec-



trical circuit only when the camera shutter is in closed position.

4,278,334

ILLUMINATION CONTROL APPARATUS FOR PROJECTION DEVICE

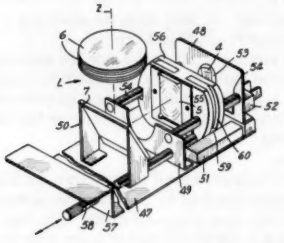
Masahiro Maeda, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 26, 1979, Ser. No. 97,608

Claims priority, application Japan, Dec. 1, 1978, 53-149205; Dec. 12, 1978, 53-154376

Int. Cl.³ G03B *21/20*

U.S. Cl. 353—85 **25 Claims**



9. An illumination control apparatus for a device which projects an image of an object at a variable magnification onto a projection plane, said apparatus comprising:

a light source for illuminating the object;

condenser lens means provided between the light source and the object for condensing light from said light source onto the object;

means for supporting the light source for movement along the optical axis of the condenser lens means in accordance with the magnification variation so as to vary the distance between the light source and the condenser lens means;

means for controlling the power supplied from a power source to the light source, the control means including a variable resistor for varying the power in accordance with the resistance of said resistor; and

means for intercoupling the variable resistor of the control means and the light source so as to control the power supplied to the light source in accordance with the movement of the light source.

4,278,335

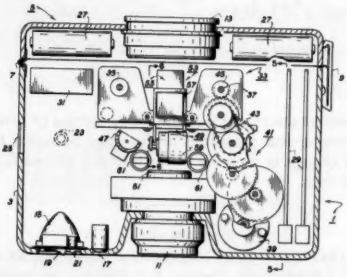
CAMERA WITH DEVELOPMENT AND VIEWING MEANS

Paul S. Vincett, Grand Valley; Arnold L. Pundsack, Oakville, both of Canada; Robert K. Hunter, Jr., Northridge, and Wylee D. McCrary, Pasadena, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 25, 1980, Ser. No. 115,578

Int. Cl.³ G03B *17/50, 17/55, 27/32*

U.S. Cl. 354—3 **15 Claims**



1. A camera comprising in combination:

(a) a light-tight case;

(b) a lens and aperture means in said case to admit a controlled amount of light focussed on an image plane within said case;

(c) means to forward and hold a supply of migration imaging film along a path in said image plane;

(d) means to electrostatically charge said film surface supplied to said image plane;

(e) means to develop a latent image in said film by application of heat to said film, said means including a supporting substrate mounted on a support arm, a thermally insulating layer on said substrate, and an electrically heated arcuate heated surface on said thermally insulating layer; and

(f) means to view the developed image on said film through said case.

4,278,336

OPERATION DETECTING DEVICE FOR CAMERA

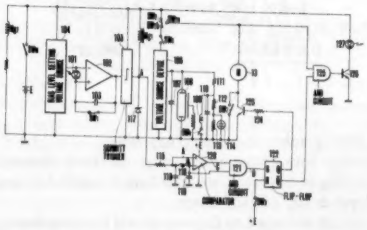
Fumio Ito; Isao Harigaya, both of Yokohama; Tetsuya Taguchi, Kawasaki; Shuichi Tamura, Yokohama; Michio Hirohata, Kawasaki, and Mutsuhide Matsuda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1979, Ser. No. 5,702

Claims priority, application Japan, Jan. 31, 1978, 53/9669

Int. Cl.³ G03B *7/081, 9/08, 17/20;* **H01H** *47/00*

U.S. Cl. 354—51 **22 Claims**



1. An operation detecting circuit for a control member of a camera, the control member being electromagnetically actuated, comprising:

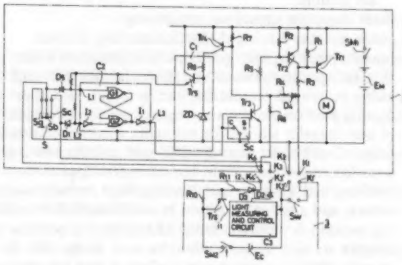
(a) an operation control member within the camera for controlling the operation of the camera, said member being movable between a first position and a second position;
(b) a switching circuit for providing an output current;
(c) a magnet coupled to said switching circuit for holding said operation control member at said first position when said output current is provided by said switching circuit, said magnet being arranged to attract a part of the operation control member to form a closed magnetic circuit when the operation control member is at said first position, said magnet releasing said operation control member for movement to said second position when said output current provided by said switching circuit is cut off,
said magnet being operative to produce an output signal including a first electrical signal when said output current is cut off and a second electrical signal when said closed magnetic circuit is opened by movement of said part of said operation control member to said second position; and
(d) an operation detecting device for detecting the operation of said operation control member, said detecting device including a delay circuit coupled to said magnet for delaying said output signal from said magnet for a certain time and a comparison circuit for comparing the output of said delay circuit with said output signal from said magnet to provide a signal representing the operation of said operation control member.

4,278,337

ELECTRIC MOTOR DRIVE DEVICE FOR CAMERA

Yukio Mashimo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1979, Ser. No. 8,512
Claims priority, application Japan, Feb. 7, 1978, 53-12745
Int. Cl.³ G03B *1/18, 7/26*
U.S. Cl. 354—60 R **7 Claims**



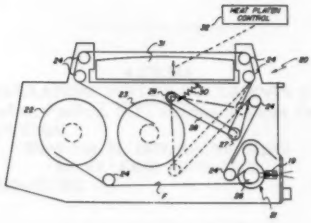
1. An electric motor drive device for a camera which includes a light measuring circuit and an electromagnetic release device, comprising:
starting operation means having a depressing movement and a returning movement which depressing movement has a first stage depression range and a second stage depression range in the operation thereof, said means being provided with switching means arranged to produce an electrical signal at each of said ranges first for actuating the light measuring circuit and then for actuating the electromagnetic release device;
a memory circuit responsive to the output of said starting operation means for producing a first output signal indicating a first state in response to an electrical signal produced in the second stage range and a second output signal indicating a second state in response to an electrical signal produced in the first stage range when said starting operation means returns, wherein said memory circuit successively memorizes the first and the second states; and
an electric motor control circuit which is connected to an electric motor which performs a winding action of the camera and is connected also to said memory circuit, said motor control circuit being arranged to inhibit driving of the motor in response to said first output signal from said memory circuit and to drive the motor in response to said second output signal from said memory circuit.

4,278,338

CAMERA-PROCESSOR APPARATUS

Charles W. Baker, Rochester; Robert J. Wilson, Webster, and Dale F. Kempf, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 21, 1980, Ser. No. 170,488
Int. Cl.³ G03B *17/50, 27/32*
U.S. Cl. 354—83 **7 Claims**



1. In camera-processor apparatus of the type having spaced film supply and take-up means, means defining a film feed path between the supply and take-up means and recording means and heat-developing means spaced along the film feed path, the improvement wherein:
(a) said heat-developing means is selectively activatable to heating and non-heating conditions with respect to film on said feed path so that, for all portions of a multi-image film segment, the commencement and termination of heat development occur respectively at substantially the same time; and
(b) said film path defining means is selectively activatable to extend and contract the path length between said recording means and said heat-developing means in timed relation with the activation of said heat-developing means, whereby moving film can be recorded while recorded film is developed in a stationary condition.

4,278,339

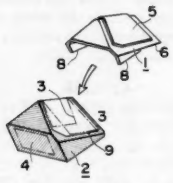
PENTAGONAL PRISM MODULE FOR CAMERA VIEWFINDER

Isamu Uchida; Yasuo Yamazaki, both of Kawachinagano, and Takeshi Egawa, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 12, 1980, Ser. No. 148,596
Claims priority, application Japan, May 18, 1979, 54-67148[U]; May 18, 1979, 54-67149[U]
Int. Cl.³ G03B *19/12, 13/08*
U.S. Cl. 354—155 **10 Claims**

1. A pentagonal prism module for use in a viewfinder of a single lens reflex camera, comprising:
a pentagonal prism adapted to totally reflect viewfinder light flux at effective optical path regions on its pair of roof surfaces; and
a protection cover including a pair of roof walls accomodated to said roof surfaces of said pentagonal prism, said roof walls having recessed portions corresponding to said effective optical regions on said roof surfaces and peripheral portions corresponding to portions on said roof surfaces out of said effective optical path regions, and said protection cover being attachable to said pentagonal prism for protection of said roof surfaces with said peripheral portions contacted on said portions on said roof sur-

faces out of said effective optical path regions so that an air space is left between said effective optical regions on



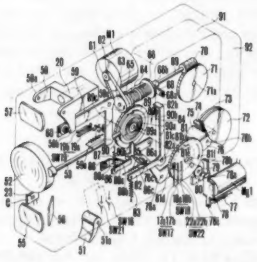
said roof surfaces and the inner surfaces of said recessed portions.

4,278,340

CAMERA HAVING AN AUTOMATIC FOCUS ADJUSTING DEVICE

Masamichi Toyama, Machida; Noritsugu Hirata, Yokohama; Hideto Iwama, Kawasaki; Hidekazu Okajima, Naka, and Akimasa Nishimura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1980, Ser. No. 171,378
Claims priority, application Japan, Jul. 25, 1979, 54-94600
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—195 **3 Claims**



2. A camera having an automatic focus adjusting device comprising:

shutter means;

means for controlling the position of the focusing lens;

an automatic focus detecting circuit;

means for presetting the adjusting position of the focusing lens by means of the output of the automatic focus detecting circuit;

an electric motor;

clutch means for selectively transmitting the driving power of the motor to the shutter means or the lens position control means; and

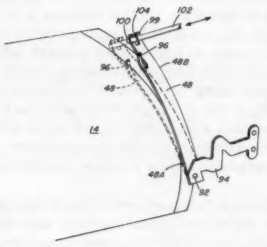
spring means for driving the preset means, said means connecting the lens position control means to the adjusting position preset means so as to be energized with the driving power by means of the rotation of the motor.

4,278,341

SHEET STRIPPING APPARATUS

Francis P. Burgess, Westboro, Mass.; Raymond G. Cormier, Nashua, N.H.; Jacques Guiguizian, Haverhill, Mass., and Leo O. Lutz, Hollis, N.H., assignors to Nashua Corporation, Nashua, N.H.

Filed Jul. 9, 1979, Ser. No. 55,523
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 SH **14 Claims**



1. In a copying apparatus having:

a rotating drum having a reusable photosensitive surface,

means for scanning an original to produce a latent electrostatic image on said surface,

means for developing said latent image, and

a transfer station for transferring said developed image onto a transfer material, said transfer station having:

means for conveying a sheet of transfer material into contact with said photosensitive surface at said transfer station for transferring said developed image from said surface to said sheet, portions of said sheet successively contacting said surface,

means for stripping said sheet from said surface, and

means for transporting said stripped sheet from said transfer station,

a sheet stripping apparatus comprising:

a guide member having a sheet contacting portion,

means for moving said guide member between a first position interposed between said drum surface and said sheet being conveyed to said surface in which said sheet contacting portion overlays a marginal portion of said surface at said transfer station for engaging a corner of a leading edge of said sheet conveyed to said transfer station, preventing said corner from contacting said photosensitive surface, and guiding said leading edge to said transport means, and a second position in which said sheet contacting portion is removed from its overlaying position with respect to said surface whereby said sheet can, at said transfer station, contact said surface at said marginal portion, and

said moving means including means for moving said member at least in a direction parallel to said photosensitive surface from said first to said second position while said sheet is being conveyed to said transfer station.

4,278,342

XEROGRAPHIC CHARGING

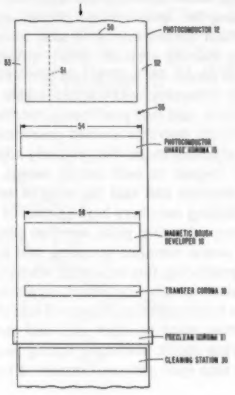
Jerry C. Andrew, and Roberta R. Tanner, both of Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,384
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 CH **7 Claims**

1. In an electrophotographic device wherein a reusable photoconductor is sequentially subjected to a photoconductor charging source of a first polarity, means for discharging a portion of said photoconductor to form an electrostatic latent image of said first polarity, a developing source having carrier beads of said first polarity which transport toner of an opposite

polarity to said latent image to tone said image, a transfer station whereat a portion of said toned image is transferred to copy medium, a preclean charging source of said opposite polarity, and a cleaning station operable to remove toner from said photoconductor, the improvement comprising:

a photoconductor charging source spanning a width of said photoconductor greater than the similar width spanned by said developing source, so as to ensure the absence of an



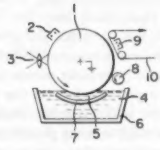
opposite polarity carrier-bead-attracting-voltage on the extremities of said photoconductor which is subjected to development, and said photoconductor charging source having a width less than the width of the photoconductor spanned by said preclean charging source, so as to ensure that all toner on said photoconductor has been subjected to said opposite polarity preclean charging source prior to entering said cleaning station.

4,278,343

INVERSION DEVELOPING METHOD FOR ELECTROPHOTOGRAPHY AND RELEVANT APPARATUSES

Junji Kurokawa, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 788,663, Apr. 18, 1977, abandoned.
This application Jan. 15, 1979, Ser. No. 3,197
Claims priority, application Japan, Apr. 22, 1976, 51-46010; Apr. 22, 1976, 51-46011
Int. Cl.[3] G03G *15/10*
U.S. Cl. 355—10 **3 Claims**



1. In a method for forming a positive development image by developing an electrostatic latent negative image on the photosensitive layer of an electrophotographic element with a liquid developer whose toner particles have the same polarity as said negative image whereby the toner particles adhere to the non-negative image areas on said photosensitive layer, the improvement which comprises:

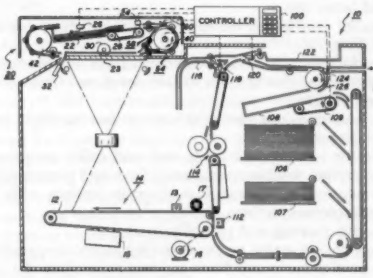
in the developing step, positioning a developing electrode in the liquid developer and in close proximity to the photosensitive layer of the electrophotographic element and maintaining said developing electrode electrically insulated from the base of the electrophotographic element so that a potential is induced on said developing electrode to create an electric field between said developing electrode and the non-negative image areas of said photosensitive layer effective to cause the toner particles to migrate to and adhere to said non-negative image areas in order to form the positive developed image thereon, then moving the photosensitive layer carrying the positive developed image thereon past a squeegee member which is electrically insulated from the base of the electrophotographic element and is electrically insulated from any source of electrical potential whereby to remove excess liquid developer from the photosensitive layer, and then transferring the toner image on the surface of the photosensitive layer to paper to form a positive developed image on the paper.

4,278,344

RECIRCULATING DUPLEX DOCUMENTS COPIER

Ravi B. Sahay, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1979, Ser. No. 71,613
Int. Cl.[3] G03B *15/00, 27/32*
U.S. Cl. 355—14 SH **12 Claims**



1. In the method of pre-collation copying of both sides of a set of duplex document sheets by plurally recirculating and inverting said documents and serially copying said documents during said plural circulations, wherein the number of said plural circulations is determined by the number of pre-collated copy sets being made from said document set, the improvement comprising:

copying only one side of said documents in a first succession of contiguous plural documents circulations, and then copying only the other side of said documents in a second succession of contiguous plural document circulations, and alternating repeating said first and second successions of document circulations,

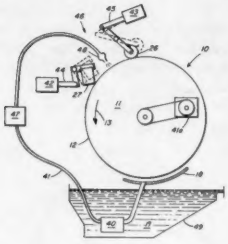
wherein the number of said document set circulations in said first and second successions of document circulations are substantially equal to one another but vary in number depending upon the number of documents in said document set,

wherein said documents in both said first and second successions of plural document circulations are circulated in a continuous loop with a constant and even total number of document sheet inversions so that the same sides of said documents are copied in each said document set circulation within each said succession, and wherein there is provided a single document set inversion circulation between each of said first and second successions so that the sides of the documents copied in said second successions are opposite from the sides copied in said first successions.

4,278,345
DRUM CLEANING APPARATUS

Austin E. Davis; Raymond G. Cormier, and Christopher A. Caggiula, all of Nashua, N.H., assignors to Nashua Corporation, Nashua, N.H.

Filed Sep. 17, 1979, Ser. No. 75,980
Int. Cl.³ G03G *21/00, 15/10*
U.S. Cl. 355—15 **4 Claims**



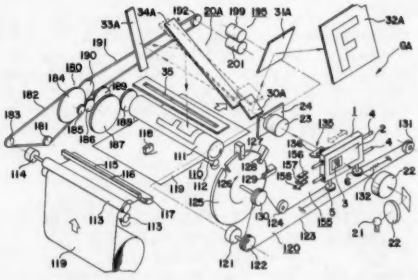
1. A photocopy apparatus having:
a rotatable drum bearing thereon a photosensitive surface;
means for creating on said surface an electrostatic latent image;
means for contacting said photosensitive surface with a liquid developer at a developing station for developing said latent image;
means for transferring the developed latent image to a copy medium;
means for cleaning residual developer from said photosensitive surface after transfer of said developed image to the copy medium;
said cleaning means having at least a cleaning blade and a cleaning roller,
means for moving said blade and said roller between an inoperative position spaced away from said photosensitive surface and an operative position in contact with said photosensitive surface;
means for rotating said rotatable drum,
said contacting means and said moving means cooperatively adapted to move said blade and said roller from the inoperative position to the operative position a predetermined time after the initiation of drum rotation whereby said blade and said roller when they are in their operative position contact a said photosensitive surface which has been wetted with said liquid developer at said developing station; and
means for supplying said liquid developer directly to said cleaning means only when said blade and said roller are in their operative position in contact with said photosensitive surface.

4,278,346
READING AND PRINTING APPARATUS

Shiro Toriumi, Zama; Takao Saijo, Matsudo; Hiroshi Endo, Fuchu; Kuniaki Kamimura, Kawasaki, and Takanori Saito, Musashino, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 26, 1979, Ser. No. 52,916
Claims priority, application Japan, Jul. 1, 1978, 53/80200; Jul. 1, 1978, 53/80201; Jul. 7, 1978, 53/83289; Jan. 19, 1979, 54/5884
Int. Cl.³ G03B *13/28*
U.S. Cl. 355—45 **11 Claims**

1. A reading and printing apparatus operable as a reader for projecting image information contained on a film onto an observation screen and as a printer for scanning and projecting said image information onto a photosensitive member through optical means, said reading and printing apparatus comprising: carrier means for holding said film in a flat state, first positioning means including a first positioning member for contacting and positioning said carrier means at a screen projecting position with the central portion of the image on said film aligned with the optical axis of said optical means so as to project said image information on said film onto the observation screen during the operation as a reader, second positioning means including a plurality of selectively operable second positioning members for selectively contacting and positioning said carrier means at a scanning starting position for scanning and projecting said image information on said film onto the photosensitive member during the operation as a printer, and scanning means for causing said carrier means to scan in one direction from said scanning starting position, return spring means connected to said carrier means for urging said carrier means in the other direction for returning said carrier means to said scanning starting position, said first positioning member and said plurality of selectively operable second positioning members each having fine adjusting means for precisely adjusting the position thereof with respect to said carrier means, each of said first positioning member and said plurality of selectively operable second positioning members having a set of a stop plate member and a stop adjusting plate member placed one upon the other and a screw member coupling said plate members and serving for producing fine adjusting relative movement therebetween, a shaft member on which said sets are mounted for simultaneous rotation about the axis of said shaft member, each set of said stop plate member and said stop adjusting plate member having shock absorbing spring means connected to one end and stop spring means connected to the other end for



being normally urged in one direction about said shaft member, a contact member mounted on said carrier means, a solenoid means operatively associated with said first positioning member for selectively moving said first positioning member into or out of the path of movement of said contact member mounted as said carrier means is scanned in said one direction by said scanning means, operating means coupled to said plurality of selectively operable second positioning member for selectively bringing said second positioning member into or out of the path of movement of said contact member on said carrier means as said carrier means is scanned in said one direction by said scanning means, said operating means including stop cam members each having a pin member on the peripheral portion and fixedly mounted on said rotatable shaft member in positions corresponding to said second positioning members, said pin members on said cam members being offset circumferentially relative to each other so that upon contact of said second stop members by the peripheral edges of said cam members by the urging force of said stop spring means, said second positioning members are spaced from said path of movement of said contact member of said carrier means, and said second positioning members are moved into said path of movement of said contact member of said carrier means again for contact with said contact member by the urging force of said stop spring means upon contact of any one of said cam members with a corresponding one of said second stop members, the spring force of said shock absorbing spring means of said first

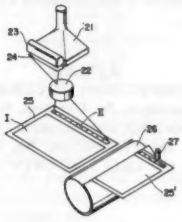
positioning member and said second positioning member being larger than that of said return spring means of said carrier means, and a threaded bolt member connected to each of said shock absorbing springs for adjusting the spring force thereof.

4,278,347

CATHODE-RAY TUBE IMAGE RECORDING DEVICE

Yoshihiko Okamoto; Tamotu Yoshizawa; Takahiro Ohta, all of Asaka, and Koichi Murata, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 7, 1980, Ser. No. 119,594
Claims priority, application Japan, Mar. 13, 1979, 54-28915
Int. Cl.³ G03B *27/72*
U.S. Cl. 355—68 **7 Claims**



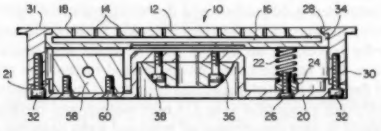
1. A device for recording an image on a cathode-ray tube on a photosensitive thermal development recording medium which comprises: means for exposing a recording medium sensitivity determining density wedge; means for sensing a developed sensitivity determining density wedge for producing a density identification step number; means for controlling at least one of the brightness and light emission time of said cathode-ray tube in response to said density identification step number.

4,278,348

LOCKING MECHANISM FOR USE IN A CHUCK FOR AN OPTICAL ALIGNMENT AND EXPOSURE APPARATUS

Ernest J. Funk, Cupertino; Thomas Wing, Woodland Hills; Jack C. Lane, and Edward S. Westbrook, IV, both of Saratoga, all of Calif., assignors to Quintel Corporation, San Jose, Calif.

Filed Nov. 26, 1979, Ser. No. 97,331
Int. Cl.³ G03B *27/60*
U.S. Cl. 355—73 **19 Claims**



1. In a chuck for use in an optical alignment and exposure apparatus having a chuck plate supported in a base member and means for urging the chuck plate away from the base member, a locking mechanism for maintaining a fixed relationship between the chuck plate and the base member comprising:

flexible blade means fastened to one of the chuck plate and base member;

a brake element fastened to the other of the chuck plate and base member, and having a surface slidably in contact with a surface of the flexible blade means; and

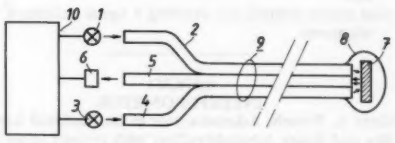
force applying means for urging the contacting surfaces of flexible blade means and the brake element together with sufficient force to prevent the flexible blade means and the brake element from sliding with respect to each other and to maintain a fixed separation between the chuck plate and the base member in response to an input stimulus.

4,278,349

FIBER OPTICAL TEMPERATURE SENSORS

Lars Sander, Vesteras, Sweden, assignor to Asea Aktiebolag, Vesteras, Sweden

Filed Jun. 22, 1979, Ser. No. 51,458
Claims priority, application Sweden, Jun. 26, 1978, 7807199
Int. Cl.³ G01J *5/28, 5/60;* G01K *11/12*
U.S. Cl. 356—44 **14 Claims**



1. Temperature measuring apparatus, comprising:

material forming a sensor and including a coloring pigment having spectral absorption characteristics with a temperature-dependent transition from a high to a low absorption characteristic over a range of optical wavelengths, said material being subjected to the temperature to be measured;

optical fibers for transmitting light at least at two wavelengths, with at least one of said wavelengths being within said range of optical wavelengths, to said temperature-dependent material and for transmitting light representative of said temperature-dependent transition at each of said at least two wavelengths from said material;

means for optically sensing said transmitted light from said temperature-dependent material by said optical fibers and generating signals representative thereof; and

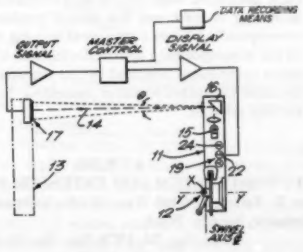
means for determining temperature from said signals, and including means for comparing the optically sensed temperature transition signals of said at least two wavelength ranges to compensate for variable transmission characteristics in said optical fibers.

4,278,350

HUB ALIGNMENT

Michael D. Rawle, Abingdon, and Peter E. G. Marshall, Haddenham, both of England, assignors to BL Cars Limited, London, England

Filed Jul. 27, 1979, Ser. No. 61,401
Claims priority, application United Kingdom, Jul. 28, 1978, 31492/78
Int. Cl.³ B01B *11/275*
U.S. Cl. 356—155 **9 Claims**



1. Apparatus for measuring the alignment of a road wheel hub on a production line, comprising:

light transmitting means for transmitting a beam of light

between a pair of road wheel hubs of a vehicle; each of said road wheel hubs pivoting about a respective axis for alignment, and each hub having a rotational axis;

means for connecting said light transmitting means to a first of said hubs in predetermined alignment therewith;

a photo-sensitive receiver;

means for connecting said photo-sensitive receiver to the other of said hubs with said receiver substantially in the plane of the pivoting axis perpendicular to the rotational axis of the hub, and radially of the pivoting axis of the hub;

a master control unit remote from said hubs to receive signals from said photo-sensitive receiver;

said light beam and said photo-sensitive receiver cooperating to determine the state of alignment of said first hub; and

said master control unit emitting a signal indicative of said alignment.

4,278,351

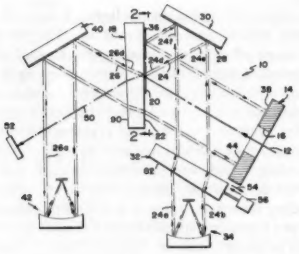
INTERFEROMETER

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of James B. Breckinridge, Robert H. Norton, both of La Canada, Rudolf A. Schindler, Sierra Madre, all of Calif.

Filed May 9, 1979, Ser. No. 37,560

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—345 **12 Claims**



1. An interferometer comprising:

first and second retroreflectors which return a beam reversed in orientation from the incoming beam;

a beamsplitter for receiving a light beam directed along a predetermined input path, to split it into first and second beam components;

means for directing each of said beam components along a corresponding path leading into a corresponding one of said retroreflectors, and for recombining beam components from said retroreflectors to form an interference pattern;

said directing means including two mirror arrangements, each associated with one of said retroreflectors and each including at least one flat mirror positioned to direct a corresponding beam component leaving said beamsplitter to the corresponding retroreflector and to also reflect the beam component returned by the retroreflector, whereby to make the interferometer insensitive to slight tilting of the flat mirrors.

4,278,352

SUPPORT SYSTEM FOR EXTENSIBLE BELLOWS

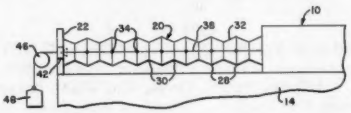
Bruce E. Keller, Federal Way, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 24, 1979, Ser. No. 88,204

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—358 **9 Claims**

1. A horizontally-extending tubular means for enclosing a light beam or the like comprising a generally cylindrical extensible and collapsible bellows having alternate large and small diameter rigid circular elements interconnected by flexible material such that the circular elements can move toward or away from each other, grommet means attached to at least



some of said circular elements and aligned along straight-line paths of travel, cable means extending through said grommet means, and means for tensioning said cable means to prevent sagging of the bellows when extended in a horizontal direction.

4,278,353

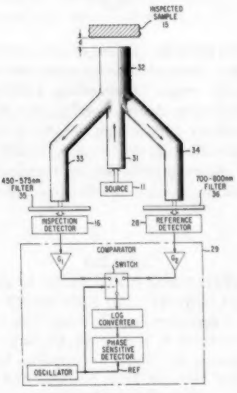
OPTICAL INSPECTION OF GOLD SURFACES

Frederick W. Ostermayer, Jr., Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 11, 1980, Ser. No. 139,172

Int. Cl.³ G01J *3/48*; G01N *21/55*

U.S. Cl. 356—416 **10 Claims**



1. A method of making an article comprising the step of determining the condition of a gold surface on said article by steps comprising directing illumination from a source toward the inspected gold surface and detecting reflected light therefrom by means of an inspection detector, with said illumination thereby traversing an optical path between said source, said surface, and said detector, characterized in that the reflected light detected by said inspection detector is substantially in the wavelength range of 450 to 575 nanometers, and further characterized in that the amount of reflected light detected in said wavelength range is substantially determined by the degree of scattering of said illumination by said gold surface.

4,278,354

INJECTION UNIT WITH ADJUSTABLE PLASTIFICATION CYLINDER

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Feb. 26, 1980, Ser. No. 124,847

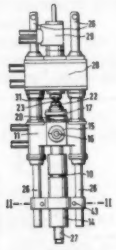
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1979, 2907557

Int. Cl.³ B29B *1/06*

U.S. Cl. 366—78 **8 Claims**

1. An improved injection unit which is adapted for use with

an injection molding machine for plastic materials and which comprises an elongated tubular plastification cylinder defining a longitudinal axis for the unit, a plastification screw occupying the bore of said cylinder, including means for rotating the plastification screw in a plastification stroke and means for axially advancing the plastification screw in an injection stroke, and means for supporting and positioning the plastification cylinder, including a cylinder carrier member engaging the rear portion of the plastification cylinder, the improvement in said injection unit comprising:



means for adjusting the longitudinal position of the plastification cylinder in relation to said cylinder carrier member, in a continuous manner; and

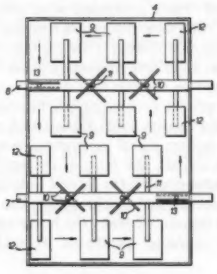
means for clamping the plastification cylinder to the cylinder carrier member in any adjustment position.

4,278,355

METHOD OF MIXING PARTICULATE COMPONENTS

Halvor G. Forberg, Hagabakken 2, 3250 Larvik, Norway

Filed Jul. 16, 1979, Ser. No. 58,092
Claims priority, application Norway, Jul. 25, 1978, 782550
Int. Cl.[3] B01F *7/04*
U.S. Cl. 366—300 **8 Claims**



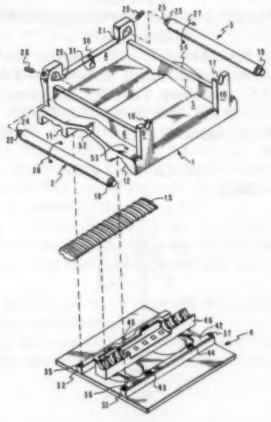
1. An apparatus for mixing particulate components comprising a mixing chamber, first and second shafts supported in said chamber in substantially the same horizontal plane for rotation about parallel axes, means for rotating said shafts in opposite directions so that both shafts move upwardly at their adjacent sides, first blade means extending radially of said first shaft and disposed at an angle relative to its axis and operable upon rotation of said first shaft to transport said particulate components in a first axial direction through a transport zone disposed below said shafts, second blade means extending radially of said second shaft and disposed at an angle relative to its axis and operable upon rotation of said second shaft to convey said particulate components in a second axial direction opposite to said first axial direction through said transport zone, said first and second blades moving toward each other and upwardly in the region between said shafts and operable to move said particulate components through a mixing zone which is above and between said shafts, said first and second blade means being shaped and angled, and said rotating means causing said first and second blade means to rotate at a speed whereby said particulate material is fluidized and floats in said mixing zone, third blade means extending radially of said first shaft and disposed adjacent the downstream end thereof in the first axial direction, said third blade means being non-parallel to said first blade means and operable upon rotation of said first shaft to convey said particulate material toward said second shaft, and fourth blade means extending radially of said second shaft and disposed adjacent the downstream end thereof in the second axial direction, said fourth blade means being non-parallel to said second blade means and operable upon rotation of said second shaft to convey said particulate material toward said first shaft.

4,278,356

DAISY WHEEL PRINTER CARRIER

Adolph B. Habich, and Ronald E. Hunt, both of Austin, Tex., assignors to International Business Machins Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,646
Int. Cl.[3] B41J *11/20*
U.S. Cl. 400—59 **9 Claims**



1. A daisy wheel printer carrier for carrying both a selection motor and a carrier for print element and ribbon cartridges, said printer carrier comprising:

(a) a number of adjustable eccentric rails upon which said selection motor and cartridge carrier are mounted for translation toward and away from a platen; and

(b) means mountable on a number of escapement rails for escapement along said platen, said means including means for accepting said eccentric rails, said eccentric rails (1) extending perpendicular to the direction said escapement rails extend, and (2) having an end portion having an axis of rotation offset from the axis of rotation of the remainder of said eccentric rails.

4,278,357

APPARATUS FOR CONTROLLING IMPRESSION IN A DAISY WHEEL PRINTER

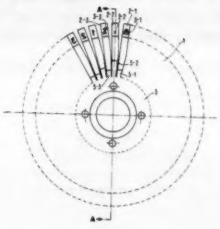
Arno Matla, and Horst D. Matthaei, both of Waldenbuch, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1979, Ser. No. 48,920

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832338

Int. Cl.[3] B41J *1/26, 1/60*

U.S. Cl. 400—144.2 9 Claims



1. An apparatus for controlling impression in a daisy wheel printer for printing characters of different sizes, said daisy wheel printer including a print element having radially extending petals with said characters on the outer extermities thereof, said apparatus comprising radially extending spring petals associated with said element petals for which impression is to be controlled, the lengths of said spring petals being inversely proportional to the sizes of said characters.

4,278,358

TYPE CARRIER WITH IMPRESSION CONTROL FORMATION

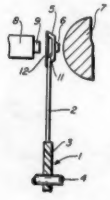
Peter Zahner, Schwabhausen, and Diethelm Puch, Nurnberg, both of Fed. Rep. of Germany, assignors to Triumph Werke Nurnberg A.G., Nurnberg, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 56,057

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2831009

Int. Cl.[3] B41J *1/30*

U.S. Cl. 400—144.2 3 Claims



1. In combination, a print wheel having a plurality of flexible radial spokes extending from a common center, said spokes on one side adjacent the ends thereof carrying types of varying print area, and an axially moveable constant energy print hammer for impacting a positioned spoke on the side directly opposite the type carrying side to effect printing, the improvement comprising

a resilient energy absorbing formation on each of said spokes on the side opposite the type carrying side and directly opposite said types, said formations having a resilience related to the print area of associated type for absorbing an amount of hammer energy related to the spring area of a type thereby to obtain substantially uniform print density for all said type.

4,278,359

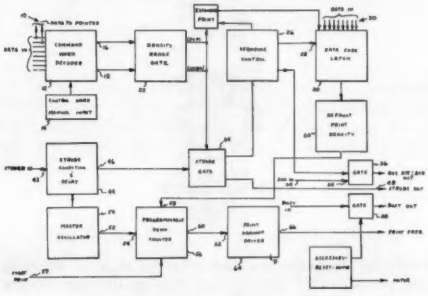
CONTROL CIRCUIT FOR USE WITH A DOT MATRIX PRINTER

David S. Weikel, Fort Wayne, Ind., assignor to Weikel Associates, Inc., Fort Wayne, Ind.

Filed Apr. 16, 1979, Ser. No. 30,120

Int. Cl.[3] B41J *19/32*

U.S. Cl. 400—303 10 Claims



1. A control circuit for use with a dot matrix printer and a data source which generates parallel binary coded data signals including a predetermined command word signal and density code signals comprising: A manual control word signal generating means for generating a parallel binary coded control word signal, gate means including a plurality of logic gates each having one input connected to said data source to receive a predetermined one of the bits of said parallel binary coded data signal and another input connected to said manual control word signal generating means to receive a predetermined one of the bits of said control word signals for generating a control circuit enabling signal in response to a logical correspondence of said command and said control word sigals, density latch gates means connected to said data source to receive density code signals and to said command word gate means for generating a density code output signal in response to said command word signal and said density code signals received from said data source, and a variable frequency printer signal generating means connected to receive said density code output signals for generating printer control signals having a frequency proportional to said density code signal, said printer being connected to said printer signal generating means to receive said printer control signals, the ratio of the printing frequency of the printing hammers and the lateral velocity of the printing head being proporational to changes in the frequency of said printer control signals, whereby the horizontal dimension each alpha-numeric character produced by said printer may be varied.

4,278,360

CONTAINER FOR STORING AND METERING LIQUIDS

Willy Lorscheid, Pulheim, and Ludwig Wingen, Cologne, both of Fed. Rep. of Germany, assignors to Joachim Czech, Donaustauf, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,500

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827585

Int. Cl.[3] B43K *5/10*

U.S. Cl. 401—151 1 Claim

1. A container having a reservoir for storing liquid and an intermediate storage space of variable volume which is above the reservoir and communicated therewith and into which liquid from the reservoir can be drawn by increasing the volume thereof to produce a vacuum therein, said container being characterized by:

(A). a tube having a lower end near the bottom of the reservoir and having an upper end opening to said intermediate

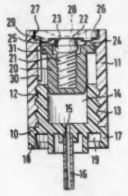
storage space to communicate said space with the reservoir, said tube having an inside diameter so related to the viscosity of liquid in the reservoir as to be

(1) small enough for a column of liquid to be present in said tube at substantially all times when pressure in said intermediate storage space is equal to pressure in the reservoir, and

(2) large enough for liquid to flow into said intermediate storage space when pressure therein is lower than pressure in the reservoir;

(B). the portion of the container that defines said intermediate storage space comprising an upper side wall having a substantially cylindrical inner surface and a threaded external surface;

(C). an inverted-cup-shaped closure cap for said container having a side wall that is internally threaded for engagement with said threaded external surface and having an end wall;



(D). a piston having a cylindrical surface that can sealingly oppose said inner surface of the upper side wall, said piston being cooperable with said side wall to close the top of the intermediate storage space and to vary the volume thereof; and

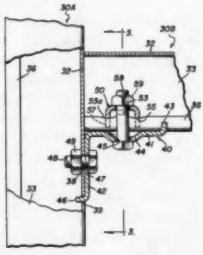
(E). means providing a coaxial, substantially rigid, axially adjustable connection between the piston and said end wall of the closure cap whereby the piston, in every position of its adjustment relative to said cap, is constrained to partake of axial motion of said cap, so that upon installation and removal of said cap the piston decreases and increases, respectively, the volume of said storage space by an amount that depends upon the position of axial adjustment of the piston relative to said cap.

4,278,361

CHANNEL INTERCONNECTION APPARATUS

Mark H. Steinke, North Aurora, Ill., assignor to Lyon Metal Products, Incorporated, Aurora, Ill.

Filed Apr. 11, 1979, Ser. No. 28,977
Int. Cl.³ F16B *7/04*
U.S. Cl. 403—189 **3 Claims**



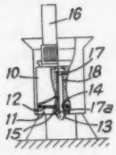
1. The combination comprising a channel member having a rear wall and a pair of side walls and a pair of front walls and a pair of flanges, said side walls extending forwardly from said rear wall, said front walls extending toward each other from the forward ends of said side walls and defining a slot therebetween, said flanges respectively extending at an acute angle from the front walls in the region of said slot rearwardly and toward the associated side walls, the distal ends of said flanges being unattached, a connector dimensioned to be within said channel member transversely across said slot, said connector having two substantially U-shaped deforming surfaces which respectively define two notches that respectively encompass said flanges, the width of each of said notches being less than the width of each of said flanges and means for drawing said connector against said channel member to cause said flanges to be bendingly deformed respectively toward said front walls while being trapped by said notches.

4,278,362

METHOD FOR LIFTING AN IMMERSED DEVICE AND RETURNING IT INTO POSITION, AND FOR CARRYING OUT SAID METHOD

Norbert Scherrer, St. Just, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

Filed Mar. 6, 1979, Ser. No. 18,058
Claims priority, application France, Mar. 10, 1978, 78 07048
Int. Cl.³ B63C *11/00*
U.S. Cl. 405—191 **16 Claims**



1. A method for lifting and returning into position at least one immersed device mounted on a base and equipped with a locating buoy and a guide line wound or folded on itself and connected at one end to the buoy and at its other end to a locking member connected to the base, said method comprising:

releasing said buoy to cause it to rise to the surface and establish said guide line between the base and the surface,

lowering a lifting tool along said guide line,

separating the immersed device from the base and from said locking member and lifting said immersed device to the surface by means of the lifting tool,

providing a device to be returned into immersed position with a fresh buoy, a new locking member and a new guide line connecting said fresh buoy to said new locking member,

lowering said device to be returned into immersed position along the established guide line,

connecting said new locking member to the base, and

severing the previously established guide line.

4,278,363

ROCK BOLT AND INSTALLATION SYSTEM

Dai S. Choi, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Jun. 21, 1979, Ser. No. 50,586
Int. Cl.³ E21D *20/02*
U.S. Cl. 405—260 **7 Claims**

1. A method of installing a rock bolt in a mine roof comprising:

(a) providing a rock bolt having an axial fluid passage therethrough, a nozzle at one end of said passage having a diameter less than one third the diameter of the bolt, and a groove in the outer surface of the bolt providing a return fluid passage;

(b) pumping fluid through said nozzle under a pressure of 70 to 1400 kg/cm², said fluid impinging on said mine roof and

forming a bore therein having a diameter less than the diameter of said bolt;

(c) applying force to said bolt to cause it to move into said bore as the bore is formed;

(d) discontinuing the pumping of said fluid; and

(e) disconnecting the source of said fluid from said bolt whereby said bolt is retained in said bore to provide support to said mine roof.

4,278,364

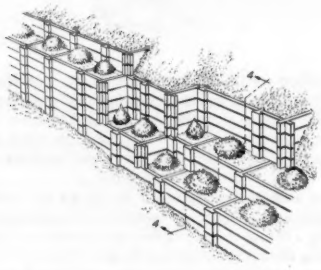
RETAINING TIES

Stanford Frehner, c/o S. & F. Sales, P.O. Box 15338, Salt Lake City, Utah 84115

Filed Aug. 23, 1979, Ser. No. 68,903

Int. Cl.³ E02D *17/00*

U.S. Cl. 405—273 **4 Claims**



1. A block retaining wall system including elongated first course blocks, second anchor blocks, third and fourth course blocks, each of said blocks being of the same heighth, said first blocks being of the same first predetermined length, said second blocks being of the same second predetermined length, said third blocks being of the same third predetermined length and said fourth blocks being of the same predetermined fourth length, said third and fourth blocks including half heighth downwardly and upwardly opening transverse notches, respectively, formed therethrough adjacent corresponding first sets of ends thereof, said first, third and fourth blocks including longitudinal inner and outer upstanding sides and longitudinal top and bottom horizontal surfaces, said inner sides including longitudinal notches formed therein opening through one set of corresponding surfaces and longitudinal projections projecting outwardly from the other set of corresponding surfaces with the projections of tiers of vertically stacked first, third and fourth blocks seated in the longitudinal notches of adjacent blocks of the corresponding tiers of blocks, said second anchor blocks including forward and rearward ends including small and large transverse dimension horizontally transversely enlarged heads, respectively, the rear ends of said second blocks including upstanding rear sides and horizontal upper and lower surfaces, said rear sides including notches formed therein and extending longitudinally therealong opening through one set of corresponding upper and lower surfaces thereof and projections extending longitudinally therealong projecting outwardly from the other set of corresponding upper and lower surfaces thereof with the last mentioned projections of the tiers of vertically stacked second blocks seated in the longitudinal notches of the adjacent large transverse dimension heads of corresponding tiers of second blocks, said second blocks being arrangeable with said small transverse dimension heads disposed forward of and lengthwise overlapping the outer sides of spaced ends of adjacent course blocks between which the forward ends of said second anchor blocks project, adjacent third and fourth blocks of each course of blocks having their half heighth notched ends interfitted with each other with the third and fourth blocks disposed generally at right angles to each other and in the same horizontal plane.

4,278,365

CONTROL SYSTEM FOR CONTROLLING A PLANT INCLUDING A MOBILE SUCTION DEVICE FOR SUCKING SUSPENDIBLE MATERIAL

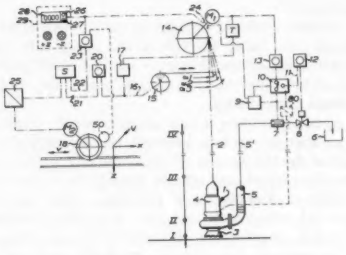
Nils A. Sandberg, Hässleholm, Sweden, assignor to Ingenjorsfirman N. A. Sandberg Industrikonstruktioner AB and Trelleborg AB, both of, Sweden

Filed Mar. 29, 1978, Ser. No. 891,275

Claims priority, application Sweden, Mar. 31, 1977, 7703749

Int. Cl.³ B65G *53/66*

U.S. Cl. 406—30 **5 Claims**



1. Method of controlling a device for sucking a material suspendible in air or liquid having a suction nozzle connected to a pump through a conduit by means of a sensor connected to said conduit, the suction nozzle being supported via a flexible supporting means by a hoisting device which is carried by said device for moving the hoisting device and the nozzle along at least one horizontal axis at adjustable velocity, while the nozzle is vertically adjustably carried by the hoisting device, wherein the hoisting device for vertically adjusting the nozzle is controlled by means of a control device by signals from the sensor in such a way that said sensor is preset to supply a control signal to the hoisting device for raising or lowering the nozzle to thereby restore the quantity per unit time in the conduit when the quantity per unit time exceeds or falls below a predetermined value which lies below a maximum value, and wherein the control device to which the sensor is connected, is adapted, when the quantity per unit time exceeds or falls below a certain upper and lower threshold level therefor as a function of time and working depth of the nozzle, to send the control signal from the sensor to control the quantity per unit time within definite limits the steps comprising: determining a maximum quantity by running the pump and nozzle in air or liquid which is free of the suspended material, assigning a limit range for the sensor that is less than the maximum quantity, selecting a time interval for a time relay within which deviations from the limit range of the sensor will not alter control of the device but in excess thereof will alter control, switching the control circuit from control of the working depth of the nozzle by regulating the hoisting device to control the pump rate of the control valve depending on signal strength, time and certain

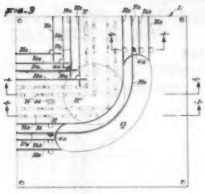
nozzle depth sensed, moving the hoisting device and the nozzle with regard to the quantity sensed, which is pumped through the conduit, moving the hoisting device in dependence on the inclination of the flexible supporting means at definite limits of inclination angle and in combination with time, controlling the quantity in dependence on signals supplied by a device for sensing the weight load carried by the movable supporting means or the tension of said means.

4,278,366

AUTOMATIC WAFER PROCESSING SYSTEM AND METHOD

W. L. Loveless, Saratoga; Richard J. Trott, Los Gatos; Robert H. Heath, Campbell, and William L. Glick, San Jose, all of Calif., assignors to GCA Corporation, Sunnyvale, Calif.

Filed Mar. 18, 1977, Ser. No. 779,074
Int. Cl.³ B65G *51/02*
U.S. Cl. 406—88 **2 Claims**



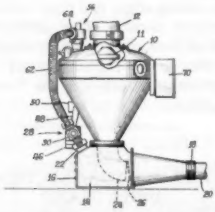
2. An automated wafer processing system comprising: a plurality of units including wafer treatment units, wafer storage units, and air bearing wafer transport track units, all of the foregoing units having either a common predetermined module size or being an integral multiple thereof and each track unit including a plurality of parallel slot pairs in the surface of said unit each pair corresponding to a predetermined wafer size, a pair of flexible guide strips extending from the surface of said track unit for guiding wafers said strips being inserted and retained in one pair of said plurality of parallel slot pairs; and means for selectively retaining said units in a substantially operatively interconnected configuration to provide at least one automated flow path for treating said wafers.

4,278,367

FEEDER APPARATUS FOR PNEUMATIC CONVEYING LINES

Wayne M. Jacobson, York, Nebr., assignor to Cyclonaire Corporation, Henderson, Nebr.

Int. Cl.³ B65G *53/40*
U.S. Cl. 406—109 **7 Claims**



1. A feeder apparatus for cyclically receiving particulate material and for injecting the same into a conveying line under fluid pressure, comprising:

a substantially closed transfer vessel having a material inlet, a material inlet valve, a material outlet and a pressure and material responsive vessel outlet valve, said pressure and material responsive vessel outlet valve being normally closed and automatically operating in response to the force of fluid pressure and material in said vessel relative to the fluid pressure in an outlet chamber in which said outlet valve is located;

an outlet chamber adjacent the material outlet for receiving the material, said chamber communicating with the conveying line and having an inlet for receiving positive fluid pressure therein:

a first valve having a first port operatively connected to the interior of said vessel and second and third ports, said first valve operating between fully opened and fully closed positions and connecting said first port only with said second port when opened and said first port only with said third port when closed;

a single source for providing fluid at a positive first predetermined pressure level;

a housing means having a first port to which said source is operably connected, a venturi throat having a downstream portion operably connected to said outlet chamber inlet, a second port operably connected to the second port of said first valve via a first flow path, a third port operably connected to the third port of said first valve via a second flow path, said second flow path having a second valve and a pressure restricting means therein;

means for controlling said first, second and material inlet valves to cycle between loading and unloading modes, said loading mode having said material inlet valve open, said first valve open and said second valve closed, so that said venturi throat creates a negative fluid pressure in said first path and in said transfer vessel, the unloading mode having said inlet valve closed, said first valve closed and said second valve open so that fluid is provided to said vessel through said second valve, said pressure restricting means and said first valve at a second pressure level that is less than said first pressure level, the positive pressure at said second level urging the materials through the material outlet into the outlet chamber, said first fluid pressure being communicated through said venturi throat to said chamber fluid inlet and providing positive fluid pressure in said outlet chamber that approximates said first pressure level, the difference between said second pressure level and said approximate first pressure level provided in said outlet chamber being effective to modulate the flow of material entering said chamber through said vessel material outlet valve to maximize material flow during unloading while substantially preventing clogging of the conveying line, all of the fluid generated by said source being driven through said transfer vessel and said chamber to said conveying line during unloading of said vessel.

4,278,368

APPARATUS AND METHOD FOR COMPACTING MATERIAL

Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00495, §371 Date Jul. 11, 1979, §102(e) Date Jul. 11, 1979
This PCT application filed Jul. 11, 1979, Ser. No. 94,255
Int. Cl.³ E01C *19/38*
U.S. Cl. 404—117 **15 Claims**

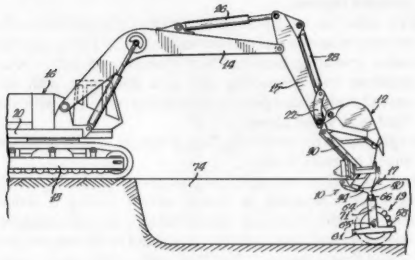
8. In a compacting apparatus for a work vehicle (**16**) having a boom (**14**), a stick (**15**) and a bucket (**12**), an impact apparatus (**17**) carried by said bucket (**12**), a shank (**34**) pivotally mounted on said apparatus, an impacting adapter (**40**) on said shank (**34**) extending away from said apparatus (**17**), an impact-receiving portion (**42**) on said shank (**34**), and means (**44**) on said apparatus (**17**) for intermittently engaging said impact-receiving portion (**42**), the improvement comprising:

a roller compactor (**19**) having a yoke (**52**) supporting a roller portion (**50**) which has means (**56**) engaging the earth;

a socket (**66**) on said yoke (**52**);

said impacting adapter (**40**) of the impact apparatus (**17**) engaging said socket (**66**) on said roller compactor (**19**); and

said intermittently engaging means (44) driving said impact-receiving portion (42) and said shank (34) for providing



intermittent impacting forces to the compactor (19) and to the roller portion (50).

4,278,369

DEVICE FOR ROUGH TURNING AND SHAFT TURNING

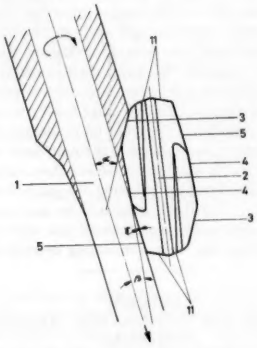
Ewald Jakobs, and Gernot Lang, both of Schwalbach, Fed. Rep. of Germany, assignors to Röchling-Burbach Weiterverarbeitung GmbH, Völklingen-Saar, Fed. Rep. of Germany

Filed Jun. 11, 1979, Ser. No. 47,112

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 2825748

Int. Cl.³ B26D *1/00*

U.S. Cl. 407—113 **5 Claims**



1. Device for rough turning and shaft turning an axially extending workpiece including a cutting insert having a cutting edge comprising a main cutting edge and an auxiliary cutting edge said main cutting edge having a first end leading in the cutting direction as said device moves relative to the workpiece and a second end spaced from the first end, wherein the improvement comprises that said cutting edge being asymmetrical, said main cutting edge comprises a first main cutting edge extending from the first end thereof toward the second end with said first main cutting edge spaced from the second end, and a second main cutting edge extending from the end of said first main cutting edge spaced from the first end to the second end of said main cutting edge and said auxiliary cutting edge extending from said second main cutting edge at the second end of said main cutting edge, said first main cutting edge and said second main cutting edge intersecting and forming a first obtuse interior angle and said second main cutting edge and said auxiliary cutting edge intersecting and forming a second obtuse interior angle with said second obtuse interior angle being greater than said first obtuse interior angle, said cutting insert being positionable relative to the workpiece for effecting turning so that said first main cutting edge is set at an angle α relative to the axis of the workpiece, said second main cutting edge is set at an angle β relative to the axis of the workpiece and said auxiliary cutting edge is set at an angle γ relative to the axis of the workpiece, and the angle α of said first main cutting edge being greater than the angle β of said second main cutting edge and the angle β of said second main cutting edge being greater than the angle γ of said auxiliary cutting edge, and the length of said first main cutting edge between the first and second ends of said main cutting edge being less than the length of said second main cutting edge between the first and second ends of said main cutting edge and said auxiliary cutting edge having a length at least as long as the length of said second main cutting edge.

4,278,370

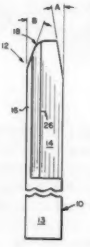
CUTTING TOOL

Gilmore M. Spear, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed May 25, 1979, Ser. No. 42,685

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—115 **4 Claims**



1. In a gear cutting tool of the type formed from a length of bar stock having a generally rectangular cross-section and having a cutting face formed into a front wall portion of the bar stock at a desired rake angle for at least a part of the length of said tool, said tool further having a base end and a cutting end, said cutting end having a profile formed thereon for defining a cutting edge between said cutting face and one side of the tool, the improvement comprising

a first part of said cutting edge serving to cut at least a portion of a side of a tooth slot of a gear,

a second part of said cutting edge serving to cut at least a portion of a bottom of a tooth slot of a gear, and

a chip breaking surface formed between said first and second parts of the cutting edge, said chip breaking surface being defined between parallel plane surfaces formed on the cutting face of the tool for substantially the full length of the cutting face so that the cutting end of the tool can be resharpened without disturbing the function of said chip breaking surface.

4,278,371

SAFETY INTERLOCK FOR ELECTRO-MAGNETIC DRILL STAND

Gary D. Meyer, Waukesha, Wis., assignor to Milwaukee Electric Tool Corporation, Brookfield, Wis.

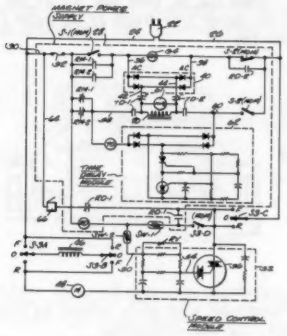
Filed Feb. 29, 1980, Ser. No. 125,967

Int. Cl.³ B23B *39/00*

U.S. Cl. 408—76 **6 Claims**

1. The combination with an electromagnetic drill stand of the type having a drill driven by an electric motor and mounted on a stand provided with an electromagnetic coil in the bottom of the stand to secure the stand to ferromagnetic material when the coil is energized, of safety means preventing operation of the motor when the coil is not energized comprising,

switch means mounted in proximity to said coil and responsive to the magnetic flux of the coil for controlling the



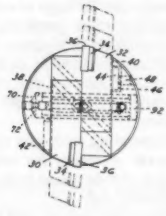
power supply to the motor and operative to interrupt the power supply in absence of a predetermined flux density.

4,278,372

ADJUSTABLE BORING BAR MECHANISM

Marvin M. Heisner, Howeel, Mich., assignor to Fansteel Inc., North Chicago, Ill.

Filed Nov. 30, 1979, Ser. No. 98,936
Int. Cl.³ B23B *29/034*
U.S. Cl. 408—183 **7 Claims**



1. A boring bar comprising:

(a) a body having a mounting end and a working end, said working end having a transverse slot for receiving slidable tool blocks, and having a cartridge recess axially spaced from but in communication with said slot and disposed at an angle to said slot,

(b) a pair of elongate tool blocks slidable in said boring bar body slot in the direction of the longitudinal axis of said slot and having means to carry a cutting insert at one end, each of said blocks having a slot extending transversely of the longitudinal axis of the block,

(c) a cartridge actuator in said cartridge recess comprising an elongate body having an elongate slot opening to said transverse slot in said body,

(d) a pair of actuator pin slides in said cartridge slot having pins extending respectively into said transverse slots in said tool blocks, and

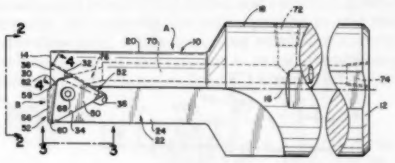
(e) means movable to actuate said pin slides in equal and opposite directions to cause said tool blocks to move in equal and opposite directions in said transverse slot of said boring bar body.

4,278,373

INDEXABLE INSERT DRILL

John R. Wolfe, III, Fayetteville, Ark., assignor to TRW Inc., Euclid, Ohio

Filed May 3, 1979, Ser. No. 35,606
Int. Cl.³ B23B *51/00*
U.S. Cl. 408—188 **10 Claims**



1. An indexable insert drill comprising:

an elongated generally cylindrical body having a longitudinal axis extending between first and second terminal ends with a portion of said body adjacent said first end comprising a drilling portion; at least one groove extending axially of said body along at least a section of said drilling portion and terminating in an insert receiving pocket at said first end, said insert receiving pocket having a generally triangular configuration with a pair of side walls extending generally axially inward into said body from said first end, the base of said receiving pocket being open at said first end, the radial innermost side wall of said insert receiving pocket defined by a reverse taper to provide an undercut inwardly from the outermost edge thereof for defining an insert receiving area; and

a hard cutting insert having opposite generally parallel faces and a generally triangular periphery defined by connecting sides and fixedly retained in said insert receiving pocket, said cutting insert including at least first and second cutting edges extending generally along said opposite faces thereof and each being defined by first and second intersecting surfaces with the first cutting edge disposed to extend radially of said body from said longitudinal axis axially outward of said body first end with neutral radial and positive axial rake, said cutting insert being further configured and disposed so that another side thereof is tapered in a manner substantially compatable with said reverse taper of the radial innermost sidewall to be captured by said insert retaining area for protecting said second cutting edge and providing greater insert stability during a drilling operation.

4,278,374

APPARATUS FOR SCREW-THREADING

Alexandre Wolosianski, 5815 Plantagenet, Montreal, Quebec, Canada

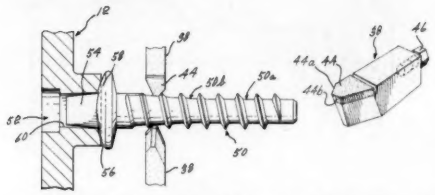
Filed May 7, 1979, Ser. No. 36,699
Claims priority, application United Kingdom, May 16, 1978, 19911/78
Int. Cl.³ B23C *3/28*
U.S. Cl. 409—74 **8 Claims**

1. In combination with a lathe having attachment means for holding and slowly revolving, about its longitudinal axis, a work-piece to be screw-threaded with a tapering portion and a cylindrical portion, an apparatus for screw-threading said work-piece comprising:

a tool holder ring eccentrically mounted around said work-piece;

drive means for rapidly rotating said ring around said work-piece, said tool holder ring rotating in the same direction as said work-piece but at a relatively higher speed;

a plurality of cutting elements radially secured in said tool holder ring, said cutting elements being disposed in a series of adjacent planes, the number of planes being equal to the length of said tapering portion divided by the pitch of said thread plus one, and said cutting elements having cutting edges and the distance of said cutting edges to the longitudinal axis of said work-piece decreasing from a first cutting element adjacent the head of said work-piece; and



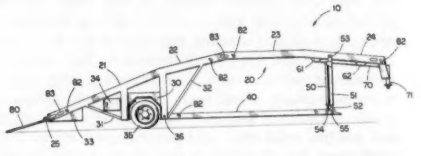
means for advancing said tool holder ring longitudinally of said revolving work-piece so that said cutting edges intermittently and successively tangentially contact said work-piece during each revolution of a cutting element, and so that the depth of the thread is accomplished by the continuous chipping of subsequent cutting elements set on said adjacent planes of said tool holder ring as said tool holder ring advances along said work-piece toward the head of said work-piece.

4,278,375

TRAILER

Jerry D. Drake, Rte. 4, Box 345A, Sullivan, Ind. 47882, and Thomas L. Drake, Rte. 2, Shelburn, Ind. 47879

Filed Mar. 13, 1980, Ser. No. 130,000
Int. Cl.³ B60P *3/06*
U.S. Cl. 410—26 **4 Claims**



1. A trailer useful for transporting vehicles, said trailer comprising:

(a) an upper track and a lower track, said upper track having a rear end ramp portion which is downwardly extending toward the ground;

(b) hitch means for connecting said trailer to a transporting vehicle, said hitch means being attached to the front end portion of said upper track and extending downwardly therefrom;

(c) a central body portion, including a wheel assembly;

(d) said lower track being pivotally connected to said central body portion at the rear of said lower track; and

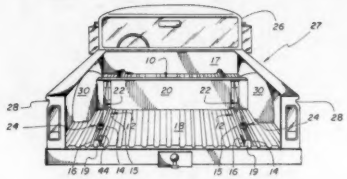
(e) power actuated telescoping means for connecting the front end portion of said lower track with said upper track, said means being extensible between a first position in which said trailer can be towed at said hitch with said trailer riding on said wheel assembly, and a second, extended position in which said trailer is supported by the front end of said lower track and the rear end of said upper track, and in which said said upper track is pivoted upwardly, allowing free access to said lower track for loading onto and unloading off of said lower track.

4,278,376

LOAD RESTRAINING PANEL

Mike E. Hunter, 6347 Acorn Forest Dr., Houston, Tex. 77088

Filed Jun. 11, 1979, Ser. No. 47,289
Int. Cl.³ B60P *7/14;* **B61D** *45/00;* **B62P** *33/02*
U.S. Cl. 410—130 **14 Claims**



1. Load restraining apparatus for cargo vehicles having a generally rectangular load space defined by side walls, one fixed end and a flat bed, comprising

a pair of elongated slotted-rails, each of said rails comprising a pair of elongated rail members each having a generally Z-shaped cross-section and disposed in an opposed closely-spaced parallel relationship to define an inner longitudinal channel and a longitudinal slot,

fastening means for attaching said pair of slotted-rails to the flat bed of the vehicle within the defined generally rectangular load space in a spaced parallel relationship,

a pair of elongated slide members each adapted for free slidable movement longitudinally within each of said slotted-rails inner channel,

a pair of generally triangular plates, one of which is vertically fixed to each of said slide members for projecting upwardly through said rail slot for defining an upright bracket member, one projecting edge of said bracket member extending generally perpendicularly above each of said slotted-rails,

a mounting flange projecting generally transversely from said generally perpendicular edge of said bracket member,

a generally rectangular rigid panel member adapted for closely-spaced transverse disposition between a pair of opposing side walls of the vehicle load space, one surface of said panel member adapted for contact with cargo carried in said defined load space for acting as a cargo restraining member,

fastening means cooperating with said mounting flanges of said spaced bracket members for attaching said panel member to said pair of slide means transversely to said pair of spaced slotted-rails, and

locking means attached to each of said slide members and adapted for movement in said rail member slots and cooperating with said slotted rails to secure said slide members in said rails to position said cargo restraining member along said rail members.

4,278,377

METHOD OF AND APPARATUS FOR STACKING CHANNEL BARS

Hubert Elineau, Versailles, France, assignor to MecanARBED S.a.r.L., Luxembourg, Luxembourg

Filed Sep. 4, 1979, Ser. No. 72,470
Claims priority, application France, Sep. 5, 1978, 78 25513
Int. Cl.³ B65G *57/081, 57/18*
U.S. Cl. 414—30 **14 Claims**

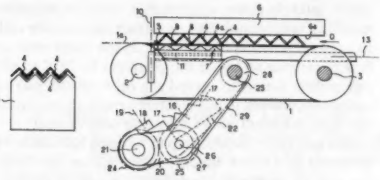
1. A method of stacking elongated bars whose widths are equal at most to a predetermined maximum bar width, said method comprising the steps of:

feeding a succession of said bars to a pickup station with said bars generally coplanar, parallel, and in edge contact in said pickup station;

picking up a group of said bars from said station;

arraying the picked-up bars of said group parallel to one

another and on centers spaced apart substantially by said maximum bar width by first supporting said bars on at least two combs each having a plurality of formations complementary to said bars with each bar resting on one such formation of each comb and second by pivoting said



combs about respective axes generally perpendicular to said group with said combs extending generally parallel to said group but transverse to the bars of said group; and

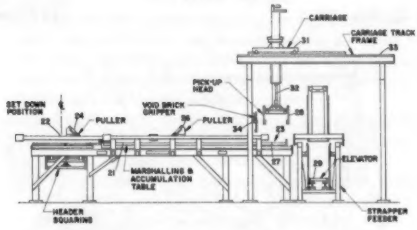
depositing the picked-up and arrayed bars in a stacking station substantially without changing the spacing between them.

4,278,378

BRICK STACKER HAVING AUTOMATIC VOID ROW FORMING

William F. Milholen, Siler City, N.C., assignor to AMI Industries, Inc., Downey, Calif.

Filed Aug. 13, 1979, Ser. No. 65,898
Int. Cl.³ B65G *57/26*
U.S. Cl. 414—32 **15 Claims**



1. A brick stacker comprising a stacking platform on which grids of brick are sequentially stacked, conveyor means operable to receive arrays of rows of superposed pairs of brick at a receiving position and to move said arrays to a transfer position to produce groups of rows of grids having a predetermined number of abutting rows of superposed pairs of brick having upper and lower layers, and void forming means associated with said conveyor means cooperating therewith to remove as a unit the upper layer portion of selected rows leaving the lower layer thereof to produce a first void in said upper layer at a first location and to insert as a unit said upper layer portion into said lower layer at a second location spaced from said first void to produce a second void in said upper layer spaced from said first void, and transfer means to sequentially transfer grids from said transfer position to said stacking platform.

4,278,379

BALE WAGON

Donald M. Grey, Selma, Calif., assignor to Sperry Corporation, New Holland, Pa.

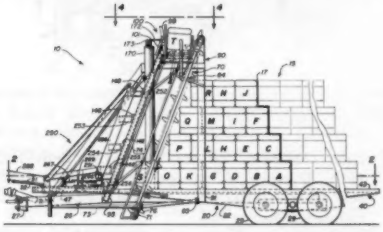
Filed Aug. 8, 1979, Ser. No. 64,971
Int. Cl.³ B65G *57/32*
U.S. Cl. 414—44 **9 Claims**

9. Bale wagon for picking up bales of crop material from the ground, forming them into a stack, and depositing the stack in a selected location, said apparatus comprising:

(a) a mobile frame adapted for movement across a field;

(b) an elongated generally flat bed having a forward end and an opposing rear end defining therebetween a longitudinal dimension and two opposing side edges defining therebetween a transverse dimension, said bed pivotally affixed to said mobile frame about an axis parallel to said transverse dimension;

(c) bale support and transfer means affixed to said mobile frame and including a bale delivery tray above said bed adjacent said forward end thereof and extending generally between said opposing side edges parallel to said transverse dimension, a bale conveying means for conveying bales onto said bale delivery tray in an end to end relationship, and a guide means inclined in a fore-and-aft direction



for guiding the movement of said bale delivery tray such that said bale delivery tray is operable to receive a row of bales end to end when in an upper neutral position and to then move downwardly and forwardly toward a delivery position closer to said bed and deposit the row of bales and return to said neutral position;

(d) pickup means affixed to said frame for engaging bales on the ground and depositing them end to end on said bale delivery tray;

(e) pusher means affixed to said frame for selectively engaging the bales deposited by said bale delivery tray and moving same from adjacent said forward end towards said rear end of said bed; and

(f) control means operably connected to said pusher means to coordinate the activation thereof with said bale delivery tray.

4,278,380

LOCK AND ELEVATOR ARRANGEMENT FOR LOADING WORKPIECES INTO THE WORK CHAMBER OF AN ELECTRON BEAM LITHOGRAPHY SYSTEM

Nicholas Guarino, Arlington, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Apr. 30, 1979, Ser. No. 34,504
Int. Cl.³ B65B *21/02*
U.S. Cl. 414—217 **2 Claims**

1. A lock and elevator arrangement for loading workpieces into the work chamber of an electron beam lithography system in which the workpieces are to be treated by an electron beam in a high vacuum, a combination comprising:

an inner chamber positioned adjacent said work chamber and having a capacity for storing a plurality of either treated or untreated workpieces;

an outer chamber positioned adjacent said inner chamber;

vacuum means for evacuating and maintaining a high vacuum in said inner and outer chambers;

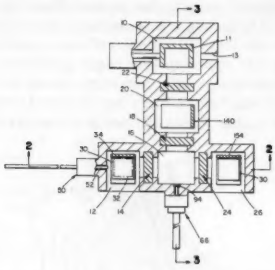
a first valve for effecting a vacuum seal between said work chamber and said inner chamber;

a second valve for effecting a vacuum seal between said inner and said outer chamber;

a third valve for effecting a vacuum seal between said outer chamber and the atmosphere, to thereby form an entrance lock;

loading means positioned adjacent said outer chamber for loading workpieces through said entrance lock into said outer chamber from the atmosphere, said loading means including elevator means for holding multiple workpieces and a pinion and rack means for precision movement of an individual workpiece through said entrance lock;

transfer means for transferring individual workpieces through said second valve means between said inner and



outer chambers, and for transferring individual workpieces through said first valve between said inner chamber and said work chamber, said transfer means including rack and pinion means; and

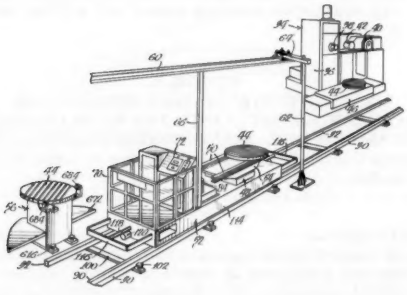
a fourth valve for effecting a vacuum seal between said outer chamber and the atmosphere, said fourth valve being positioned on said outer chamber on the opposite side of said outer chamber from said third valve, said fourth valve forming an exit lock.

4,278,381

PALLET SHUTTLE SYSTEM

Robert E. Blomquist, and Charles R. Reynolds, both of Rockford, Ill., assignors to White-Sundstrand Machine Tool, Inc., Belvidere, Ill.

Filed Oct. 8, 1976, Ser. No. 731,022
Int. Cl.[3] B25J *9/00*
U.S. Cl. 414—349 **23 Claims**



1. A pallet shuttle system for transporting pallets capable of carrying workpieces thereon between a plurality of spaced pallet handling stations, comprising:

a trackway extending adjacent the plurality of pallet handling stations,

a vehicle movable along the trackway to each of the pallet handling stations and having a fixed frame,

a platform rotatably mounted on the fixed frame and connected to index motive means for rotating the platform by at least 180° with respect to the fixed frame and actuable to rotate the transfer rail means by 90° to an intermediate travel position in which the transfer rail means extend parallel to the trackway, and a latch assembly for maintaining the rotatable platform at the intermediate travel position during travel of the vehicle along the trackway,

transfer rail means slidably mounted to the rotatable platform and having at opposite ends a pair of pallet supports for retaining a pair of pallets thereon, rail motive means actuable to extend the transfer rail means outward from the vehicle to locate one of the pair of pallet supports in pallet interchanging relationship with an adjacent pallet handling station and then to retract the transfer rail means to a center position on the vehicle, the index motive means being actuable to rotate the platform by 180° to allow the rail motive means to extend the other of the pair of pallet supports outward in pallet interchanging relationship with the same adjacent pallet handling station, and

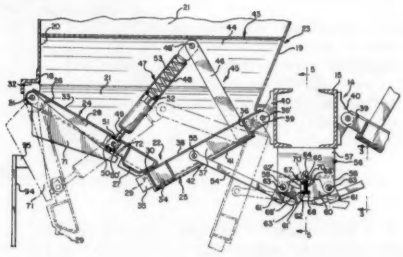
the latch assembly includes a pair of latch bars each movably mounted to a block slidably mounted on the fixed frame, the pair of latch bars each being biased to deflect out of the path of travel of a stop member carried by the rotatable platform when struck by the stop member while rotating toward the intermediate travel position but being nondeflectable when struck by the stop member while rotating in the opposite direction, and retract means mounted between the fixed frame and the block for moving the block so that the pair of latch bars are retracted out of the path of the stop member when the indexing motive means is rotating the platform by 180°.

4,278,382

DOOR LATCH MECHANISM FOR BOTTOM DUMP HOPPER CAR

Willis H. Knippel, Palos Park, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed May 31, 1979, Ser. No. 43,990
Int. Cl.[3] B61D *7/30*
U.S. Cl. 414—388 **10 Claims**



1. In a railway hopper car including an underframe,

a hopper structure supported on said underframe and including a hopper discharge opening,

closure means for said opening including inner and outer door assemblies,

each assembly including spaced interconnected longitudinal and transverse frame members and a material support panel,

hinge means supporting said doors on said car for inward and outward movement relative to said opening,

linkage means connecting said inner and outer doors providing for conjoint movement of said doors, the improvement of a locking mechanism for said doors comprising:

an arm connected to said inner door,

a support bracket connected to said underframe,

means movably connecting said arm to said support bracket,

a locking member pivotally connected to said support bracket,

said locking member including a stop in one position engaging said arm to maintain said doors in a closed position,

a cam member on said locking member,

an actuating bar including a cam surface,

said cam member being in sliding engagement with said cam surface, and

means for reciprocating said actuating bar whereby said cam member is moved on said cam surface to a position wherein said stop is disengaged from said engagement with said arm and said doors are free to move to their open position.

4,278,383

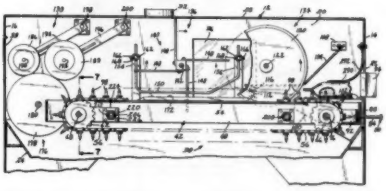
BAG OPENING AND EMPTYING APPARATUS

Edward E. Mueller, Tonka Bay; Michael K. Harrod, Prior Lake, and Frederick C. Hagemeister, Isanti, all of Minn., assignors to Whirl-Air-Flow Corporation, Minneapolis, Minn.

Filed Oct. 18, 1978, Ser. No. 952,316

Int. Cl.³ B65G *65/34*

U.S. Cl. 414—412 **6 Claims**



1. Apparatus for automatically opening and emptying bags comprising:

(a) a substantially enclosed housing having a bag inlet end and a bag outlet end, said housing having a cutting zone proximate said inlet end, a bag ejection zone proximate said outlet end, and a bag emptying zone generally between said cutting and ejection zones;

(b) conveyor means disposed in said housing for carrying bags in a generally horizontal plane between said inlet and said outlet, said conveyor means comprising

(i) first and second conveyor tracks spaced apart horizontally within said housing and extending generally between said inlet and outlet ends thereof,

(ii) first and second endless conveyor members disposed on said first and second tracks and mounted for travel thereon in a generally horizontal plane,

(iii) means on said first and second conveyor members for positively engaging the opposite lateral edges of the bags.

(iv) means on said tracks in said emptying zone for tilting said first and second conveyor members from said generally horizontal plane inward toward each other and at an angle with respect to said generally horizontal plane, and

(v) means for driving said endless conveyor members;

(c) means disposed within said cutting zone for cutting through opposite sides of the bags between said opposite lateral edges thereof; and

(d) means in said ejection zone for removing the cut bag from said conveyor members and ejecting the bag from said housing,

wherein said first and second conveyor carriages have substantially planar top surfaces on which said endless conveyor members travel in a generally horizontal plane and wherein said means for tilting said first and second conveyor members comprise first and second ramp portions mounted on said planar surfaces and having surfaces slanted inwardly with respect to a central elongation axis of said apparatus.

4,278,384

APPARATUS FOR SEVERING PACKAGES CONTAINING GRANULAR OR POWDER-LIKE MATTER AND SEVERING THE MATTER THEREFROM

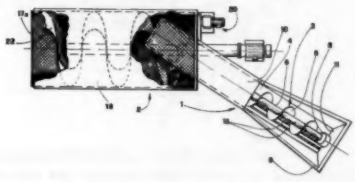
Wainer Marchesini, Carpi, Italy, assignor to WAM dei Fratelli Marchesini s.n.c., Modena, Italy

Filed Jul. 24, 1979, Ser. No. 60,405

Claims priority, application Italy, Jan. 10, 1979, 28903/79[U]

Int. Cl.³ B65B *69/00*

U.S. Cl. 414—412 **2 Claims**



1. Apparatus for removing and separating granular or powder-like matter from severable packages, said apparatus mounted on a support surface, said apparatus comprising:

(a) conveyor means including a channel supported at an incline with respect to the support surface and having inlet means disposed at a relatively low position with respect to the support surface and an outlet means disposed at a relatively high position with respect to the support surface, a conveyor screw rotatively mounted within said channel and having an edge, motor means coupled to said conveyor screw for rotating said conveyor screw whereby packages disposed within said inlet means are severed and the severed packages and their matter are conveyed by said conveyor screw to said outlet means and wherein there is included a plurality of foils disposed longitudinally along the length of said channel and spaced from each other for coacting with said edge of said conveyor screw for preventing the severed packages from winding themselves about said conveyor screw and for facilitating the conveyance of the severed packages from said inlet means to said outlet means; and

(b) means disposed at said outlet means for receiving and separating the matter from the severed packages and including a housing having a plurality of matter discharge openings therein, each of said matter discharge openings being of a size large enough to enable the matter removed from the packages to pass from said housing but small enough to prevent the empty packages from passing therethrough, an enlarged exit opening and means disposed within said housing for removing the empty packages from said housing and through said exit opening, while permitting the matter to pass through said plurality of said matter discharge openings.

4,278,385

APPARATUS FOR TRANSFERRING CIGARETTES OR THE LIKE FROM TRAYS INTO MAGAZINES OF PACKING MACHINES OR THE LIKE

Dietrich Bardenhagen; Wolfgang Raschka; Josef Glösmann, all of Hamburg, and Gerhard Tolasch, Wentorf, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Oct. 26, 1979, Ser. No. 88,473

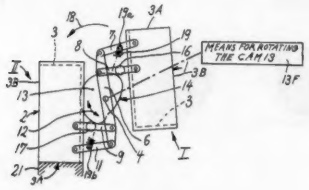
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1978, 2847131; May 3, 1979, 2917818

Int. Cl.³ B65B *19/02*

U.S. Cl. 414—419 **26 Claims**

1. Apparatus for transporting filled trays from a first station to a second station at which a filled tray is located on top of a magazine and its contents are transferred into such magazine, and for thereupon transporting the thus obtained empty trays

from said second station back to said first station, comprising holder means turnable about a substantially horizontal axis; first and second carriers turnable with said holder means and each arranged to temporarily store a filled tray or an empty tray; means for turning said holder means about said axis to thereby invert that one of said carriers which moves with a filled tray therein from said first to said second station and to simultaneously return to non-inverted position the other carrier which moves with an empty tray therein back to said first station; and means for pivoting said carriers relative to said holder means while said holder means turns to move the carriers between said stations, said pivoting means including means for lowering an inverted carrier with a filled tray therein on top of said magazine during the last stage of movement to said second station and for lifting such carrier with an empty tray therein off the top of the magazine during the initial stage of movement from said second station.



4,278,386

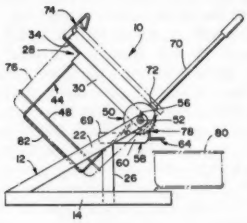
STRUCTURE FOR SUPPORTING COOKING POT FOR RE-FRIED BEANS

John Eranosian, deceased, late of Woodside, Calif. (by Florence Eranosian, executrix)

Continuation of Ser. No. 894,751, Apr. 10, 1978, abandoned. This application Apr. 7, 1980, Ser. No. 137,621

Int. Cl.³ B65G *65/34*

U.S. Cl. 414—421 **10 Claims**



1. Apparatus for cooking and dispensing food comprising:

a base having a pair of side members, a pair of connecting members fixed to said side members to form a rectangle, a pair of angled members each having one end fixed to one end of a respective side member and extending upwardly therefrom and a pair of structural members each interconnecting a respective side member and angled member intermediate their ends for positive support thereof;

a support frame pivotally mounted on the other ends of said angled members and configured to support a hot food carrying body for tilting movement about an axis which is above and to one side of the center of a hot food carrying body supported thereby; and

a ratchet mechanism comprising a toothed wheel rigidly connected to one of said base and support frame and an arm pivotally mounted to the other of said base and support frame for allowing free pivotal movement of the support frame about said axis to raise the center of gravity of a hot food carrying body supported thereby relative to the base by tilting movement while holding the support frame against pivotal movement in the opposite direction about said axis to maintain the center of gravity of a hot food carrying body supported thereby in a variety of elevated positions relative to the base.

4,278,387

DEVICE FOR TRANSFERRING AN INVALID FROM HIS INVALID CHAIR INTO A MOTOR VEHICLE AND CONVERSELY

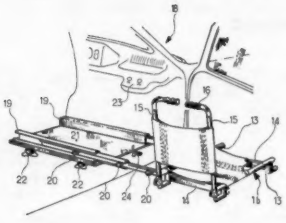
Marie-Claude J. Seguela, 14, Rue de Beausejour; Rene F. Beton, 26, Rue de la Viguerie, and Claude A. Gonzalez, 16, Rue de Beausejour, all of, 31650 St. Orens de Gameville, France

Filed Jun. 22, 1979, Ser. No. 51,242

Claims priority, application France, Jun. 22, 1978, 78 19065

Int. Cl.³ B60N *1/12*

U.S. Cl. 414—462 **4 Claims**



1. A device for transferring an invalid from an invalid chair to a motor vehicle, and conversely, while staying on a seat of the chair, said invalid chair being equipped with a removable seat mounted on an undercarriage provided with two bearing back-wheels and two steering front-wheels, and said vehicle being equipped with a pair of outwardly extensible and inwardly retractable arms, said arms being also vertically movable, wherein said pair of arms comprise two telescopic male slippers parallely fitted in a horizontal plane and movable in a backward and forward direction transverse to the longitudinal axis of the motor vehicle, said male slippers fitting inside two female slippers integral with the removable seat, in a plane perpendicular to the plane of symmetry of the invalid chair.

4,278,388

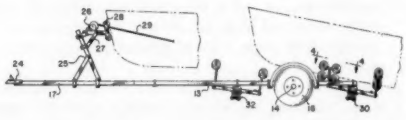
PIVOTAL ROLLER MOUNTING SYSTEM

Lawrence N. Johnson, West 130 Highdrive, Spokane, Wash. 99203

Filed May 29, 1979, Ser. No. 43,501

Int. Cl.³ B60P *3/10*

U.S. Cl. 414—534 **14 Claims**



1. A boat support assembly for use on a boat trailer having a cross bar extending transversely across the longitudinal axis of the trailer comprising

pivotal connection forming means adapted to engage the cross bar of a trailer for forming a pivotal connection thereat for boat hull engaging means such that the boat hull engaging means can pivot relative to a longitudinal axis of the trailer about the point of pivotal connection with the cross bar,

boat hull engaging means carried by said pivotal connection forming means for supporting a boat thereupon, and

support arm means interconnecting said pivotal connection forming means and said boat hull engaging means,

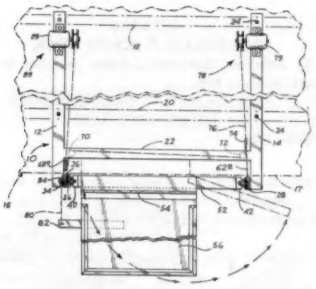
said support arm means being pivotally connected to said pivotal connection forming means for free pivotal movement of said support arm and said boat hull engaging means connected thereto in a plane transverse to the longitudinal axis of the trailer at the pivotal connection with the cross bar.

4,278,389

MOBILE VEHICLE INVALID LIFT ASSEMBLY

John H. Konkle, 37238 Immigrant Rd., Pleasant Hill, Oreg. 97401

Filed Oct. 11, 1979, Ser. No. 83,869
Int. Cl.³ B60P *1/46*
U.S. Cl. 414—540 **4 Claims**



1. In combination with a vehicle including a longitudinally extending beam means forming the main supporting frame of the vehicle, and cabin structure disposed over and supported on said beam means, including a doorway in the side of the structure providing access to the interior of the structure, a lift assembly comprising:

a pair of spaced uprights positioned outwardly of and unjoined to said side of said structure, and adjacent opposite sides, respectfully, of said door, having upper ends above the sill of the door,

a support arm for each upright joined to the base of the upright and extending under the vehicle and transversely of said beam means, and mounted on said beam means, said support arms providing the sole support for the uprights,

an elongate riding arm extending parallel to each upright and mounted for relative movement along the length of the upright between a lowered position where the base of the riding arm is below the base of the upright and adjacent ground level, and a raised position where the base of the riding arm is at the level of the sill of the door,

a platform operatively interconnected between the bases of the riding arms for relative pivotal movement about a horizontal axis extending transversely of said riding arms, between horizontal and vertical positions,

first and second cable training means mounted on and adjacent the top and bottom, respectively of each upright, and

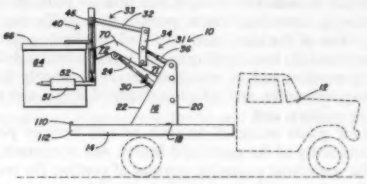
powered means for raising said riding arms in unison from their lowered to their raised positions to move the platform from ground level to the elevation of the sill of the door, said powered means including cables for said riding arms extending from connections with the riding arms over said first and then said second training means and thence under the vehicle, and powered take-up means under the vehicle actuatable to take up said cables by retracting such over said training means.

4,278,390

GARBAGE CONTAINER TRUCK

Thomas M. Ahearn, 845 Burnett Rd., Chicopee, Mass. 01020

Filed Sep. 4, 1979, Ser. No. 72,437
Int. Cl.³ B65F *3/02*
U.S. Cl. 414—549 **19 Claims**



1. A container-handling vehicle comprising:

a vehicular bed supported substantially in a horizontal position and extending longitudinally between a front end and a rear end and transversely between two sides thereof;

a single mast disposed on said bed generally in the transverse center thereof and extending generally vertically from said bed, said mast being horizontally slidable in a longitudinal direction on said bed from said front end to said rear end;

a boom extending from said mast towards said rear end of said bed;

means for raising and lowering said boom;

a fork lift assembly mounted onto the distal end of said boom and having arms adapted for grasping a container for raising and lowering thereof and for placing said container on said vehicular bed;

means adapted for maintaining said fork lift assembly at a predetermined attitude during raising and lowering of said container and during placement of said container on said vehicular bed; and

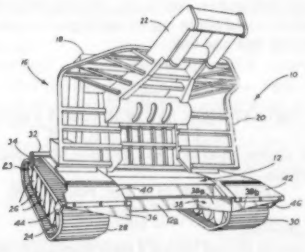
means adapted for moving said mast longitudinally along said vehicular bed selectively in both directions between said rear end and said front end to permit said container to be lifted over said rear end and onto said vehicular bed at said rear end and to permit said container to be subsequently lifted from said vehicular bed.

4,278,391

PROTECTION MEANS FOR TRACKS IN A TRACK-LAYING VEHICLE

Joseph E. Dagenais, 3712 17th Ave., Vernon, B.C., Canada

Filed Mar. 2, 1979, Ser. No. 16,897
Int. Cl.³ B66C *1/42*; B60R *19/04*
U.S. Cl. 414—559 **3 Claims**



1. Apparatus for use in a vehicle having a pair of laterally spaced endless tracks, a frame member extending laterally between rear portions of the tracks, and a rear load-hauling assembly for pulling a load of logs and the like at an elevated

position toward the rear of the vehicle, said apparatus comprising,

bumper means adapted to be mounted on the frame member and including, for each track, a bumper portion extending substantially horizontally across the rear of the track, and a mounting portion extending along an inner side of the track,

a fender mounted on each of said bumper portions and extending from that bumper portion rearwardly over a rear portion of the associated track and terminating forwardly adjacent the load-hauling assembly, each fender defining a log-support surface which is curved upwardly progressing forwardly, and which is disposed above said mounting portion, and

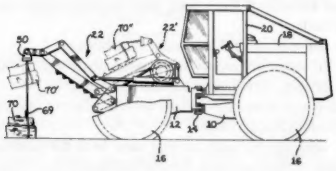
a track guide mounted on each of said bumper portions, outwardly of the associated fender, and cooperating with the associated mounting portion of confine the rear portion of the track to a lateral position therebetween.

4,278,392

LOG SKIDDER WITH FOLDING ARCH

Thomas C. Meisel, Jr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 19, 1978, Ser. No. 907,454
Int. Cl.³ B66C *23/06*
U.S. Cl. 414—569 **6 Claims**



3. A log skidder or the like comprising:

a vehicle including a frame having front and rear ends;

ground engaging means on said frame whereby said vehicle may traverse the underlying terrain;

an elongated boom;

means pivotally mounting said boom to said frame adjacent said rear end for rotation about a generally horizontal axis;

a bellcrank horizontally pivoted to said boom at a location spaced from said horizontal axis and having a shorter length than said boom;

moving means interconnecting said boom and said frame for pivoting said boom on said frame;

load carrying means connected to one end of said bellcrank;

a link horizontally pivotally connected to the other end of said bellcrank and to said frame; and

said pivotal mounting means comprising two tag links, one horizontally pivotally connected to said boom intermediate its ends and to said frame, and the other horizontally pivoted to said boom and to said frame at locations different from said one link.

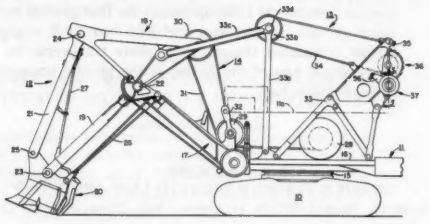
4,278,393

SLACK PREVENTION SYSTEM FOR A CROWD ROPE OF A POWER SHOVEL

George B. Baron, Marion, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 4, 1978, Ser. No. 966,336
Int. Cl.³ B66D *1/48*
U.S. Cl. 414—690 **36 Claims**

1. In a power shovel having a main frame, a front end assembly operatively connected to said main frame and a rope crowd system including a rope drum supported on said main frame, drive means supported on said main frame drivingly connected to said rope drum, a brake operatively connected to said rope drum and a rope wound on said drum and operatively connected to said front end assembly, a system for preventing said rope from becoming slack comprising means responsive to an



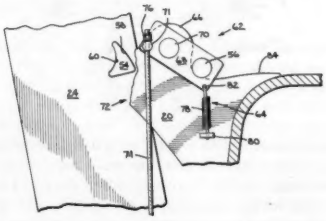
impending slack condition of said rope for actuating said brake drum thereby preventing continued pay out of said rope by said drum.

4,278,394

RELEASABLE BOOM LOCK

Stephen D. Johnson, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Jun. 4, 1979, Ser. No. 44,922
Int. Cl.³ E02F *3/32*
U.S. Cl. 414—694 **1 Claim**



1. In an earth-working implement having a boom pivoted on a boom support about a horizontal axis, a member pivoted about a horizontal axis on the free end of the boom, a hydraulic ram pivoted at one of its ends to the boom and at its opposite end pivoted to said member so that extension and retraction of the hydraulic ram pivotally rotates said member and pivots that end of the hydraulic ram pivoted to the boom, and a releasable lock means between said boom support and said boom, wherein the improvement comprises: releasable lock means having

a first element carried by said boom and defining an inclined camming surface disposed towards the boom support and an adjoining vertically disposed locking surface on the opposite side of said first element as said camming surface,

a lug attached to said boom support,

a link pivoted to said lug,

a second element at the free end of said link,

biasing means, carried by the boom support, for normally maintaining said second element adjacent to an abutment on the boom support, said first element being positioned on said boom relative to said second element such that pivotal movement of the boom towards the boom support drives the second element into engagement with the camming surface on the first element,

the camming surface being disposed relative to the second element such that it overcomes the biasing means and drives the second element toward the adjacent locking surface as the boom is rotated towards the boom support,

the locking surface of said first element being disposed relative to the camming surface such that the biasing means drives the second element across the locking surface and

towards the abutment on said boom support when the second element passes over the end of the camming surface, thereby juxtaposing the second element between said abutment and said locking surface and preventing rotation of the boom away from the boom support, and

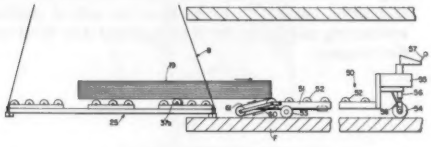
means carried by said link for releasing said second element from its position between the first element on said boom and the abutment on said boom support by pivoting said second element around said first element, thereby freeing said boom to rotate away from said boom support.

4,278,395

METHOD FOR STOCKING WALLBOARD INTO A BUILDING

Charles R. Thunell, Oakton, Va., assignor to Fairfax Investment Corp., Vienna, Va.

Filed Dec. 13, 1978, Ser. No. 969,266
Int. Cl.³ E04G *21/14*
U.S. Cl. 414—786 **14 Claims**



1. A method of stocking a building under construction with material such as a stack of wallboard comprising:

(a) lifting a load of said material from a support by the tines of a fork lift truck,

(b) depositing said load of material onto rollers of a pallet from said fork lift truck,

(c) elevating said pallet with said load of material thereon to the level of a floor of a multi-story building under construction,

(d) positioning a material transporter including a material supporting bed, provided with rollers, and support means therefor on the said floor in position directly to receive material from said elevated, loaded pallet,

(e) transferring said load of material directly from said pallet to said transporter with the load moving on the said rollers,

(f) transporting said load of material to a desired location on said floor by moving said transporter, and

(g) unloading said load of material from said transporter.

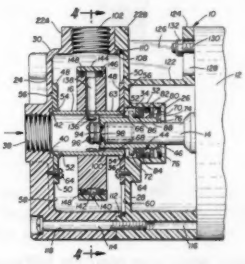
4,278,396

HUB SEALS FOR THRUST-ASSISTED CENTRIFUGAL PUMP

John Vander Horst, 28153 War Admiral Trail, Evergreen, Colo. 80439

Filed May 15, 1978, Ser. No. 905,798
Int. Cl.³ F04D *29/22*
U.S. Cl. 415—63 **6 Claims**

1. In a centrifugal pump: an impeller having a hub open at one end to receive fluid to be pumped from a supply thereof, a wheel-like body mounted on said hub in encircling relation thereto; and connecting fluid passages within said hub and body adapted upon rotation of the latter to receive fluid from the open end of the hub at one pressure and discharge same at the periphery of the body due to centrifugal action at a relatively higher pressure; a housing having a pair of spaced end walls and a partition wall therebetween cooperating with one another and with first and second circumferential wall members bridging the gaps between the latter to define a pair of chambers arranged in end-to-end relation, the first of said chambers being larger than the second and sized to receive the impeller for rotation therein, the second of said chambers being generally cylindrical in shape and positioned to receive the end of the impeller hub opposite the open end thereof for rotational movement therein in substantially coaxial relation, the partition wall having an oversize opening therein positioned to loosely pass the end of said impeller hub opposite its open end from the first chamber into the second, the end wall of said second chamber having a central opening therein positioned and adapted to receive the drive shaft of a motor for driving the impeller upon being operatively coupled to the hub thereof so as to prevent relative axial movement therebetween, the end wall of said first chamber having a fluid-intake opening therein registering with the open end of the impeller hub for delivering fluid to the latter, a first annular abutment carried by that portion of the impeller hub within the second cavity; a second abutment depending from a wall of the second cavity arranged in axially-spaced opposed relation to said first abutment; and a



thrust seal subassembly positioned within said second cavity between said first and second spaced abutments, said assembly including an O-ring within said second cavity encircling the impeller hub in circumferentially spaced relation, a first rigid ring abutting the O-ring between the latter and the second abutment, a second rigid ring between the O-ring and first annular abutment, and compression spring means between the first ring and second abutment biasing said second ring into essentially fluid-tight annular face-to-face engagement with said first annular abutment, and said spring also cooperating with said annular abutments and rings to squeeze the O-ring axially so as to expand the latter circumferentially into continuous annular fluid-tight sealed contact with the inner cylindrical surface of said second cavity while leaving unconfined that portion of said O-ring remote from the seal thus formed.

4,278,397

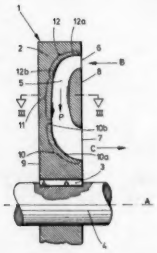
FLUID FLOW MACHINE

Herbert Bachl, Munich, Fed. Rep. of Germany, assignor to Getwent Gesellschaft fur Technische und wissenschaftliche Energieumsatzehtwicklungen m.b.H., Kaufbeuren-Neugablonz, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,842
Claims priority, application European Pat. Off., Jan. 29, 1979, 79100255.3; Fed. Rep. of Germany, May 16, 1978, 2821233
Int. Cl.³ F01D *1/06*
U.S. Cl. 415—83 **17 Claims**

1. In a fluid flow machine having at least one substantially disc-shaped rotor provided with a quantity of flow channels for a flow medium, the intake and exit openings of said channels opening through axially facing parts of said rotor, all of said intake openings being located at a predetermined distance from the axis of rotation different from the respective distance of said exit openings from said axis, each said flow channel having a radially outer and a radially inner deflector elbow formed with two legs extending at an angle of about 90° relative to one another, one leg of one elbow leading to the intake opening and extending in the direction of the relative velocity of the intake flow of the flow medium prevailing thereat, and one leg of the other elbow leading to the respective exit opening and extending in the direction of the relative velocity of the exit flow, the respective other legs of said elbows being aligned

with a common substantially radial connecting section interconnecting the two deflector elbows, the improvement comprised in that the intake openings as well as the exit openings are located at the same axial surface of said rotor, said one legs having wall surfaces facing circumferentially of said rotor, which wall surfaces are curved from said elbows to the respective intake and exit openings, said curvature appearing in cutting planes extending perpendicular to the radial extent of the corresponding flow channel, said one legs extending toward their respective intake and exit openings in directions which, when projected on a plane containing the axis of the rotor and perpendicular to the radial extent of the corresponding flow channel, subtend substantially equal angles with said rotor axis,



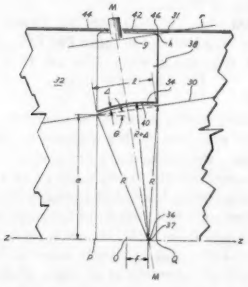
said angles each being approximately halfway between zero and a right angle, said rotor being a solid disc-like body wherein the wall thickness of said flow channels varies in dependence on the location of portions of said flow channel in said body, said same axial surface of said rotor being a common radially planar first side of said rotor, said disc-shaped rotor having a radially planar second side coextensive with and parallel to said first side and extending from a central opening to the peripheral wall of said disc, so as to permit axial stacking of additional radially planar sided bodies carrying additional flow channels flush on both sides of said rotor for flow communication between flow channels in said rotor and at least one additional body.

4,278,398

APPARATUS FOR MAINTAINING VARIABLE VANE CLEARANCE

Peter R. Hull, Ipswich, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Dec. 4, 1978, Ser. No. 966,304
Int. Cl.³ F01D *17/16*
U.S. Cl. 415—160 **3 Claims**



1. For use in a gas turbine engine having an axially extending flow path disposed circumferentially about the axial centerline of said engine, the invention comprising:

a first axially extending wall disposed circumferentially about said center line, said wall comprising a surface of revolution about said axial center line, said wall disposed with respect to said center line such that the distance between said wall and said center line is non-constant, said wall having a circumferentially and axially extending radially facing spherically contoured face having a first center of curvature disposed at a first location on said centerline;

a second axially extending wall disposed circumferentially about said center line, said second wall comprising an entirely non-spherical second surface of revolution about said axial center line, said second wall disposed with respect to said center line such that the distance between said second wall and said center line is substantially constant;

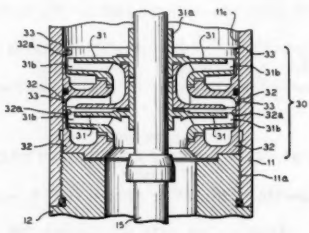
a variable position airfoil residing in and extending across said flow path between said first and second wall and having a radially contoured end face having a second center of curvature disposed at a second location, said end face disposed in spaced apart confronting facing relationship with said spherically contoured face of said first wall, said airfoil adapted to rotate about an axis of rotation intersecting said center line at an angle less than 90° at said first location.

4,278,399

PUMPING STAGE FOR MULTI-STAGE CENTRIFUGAL PUMP

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Filed Jun. 21, 1979, Ser. No. 50,915
Int. Cl.³ F04D *1/06, 13/10, 29/24*
U.S. Cl. 415—199.1 **2 Claims**



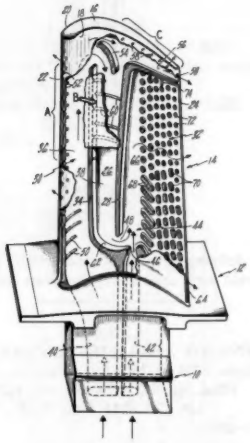
1. A centrifugal pump stage for a multi-stage oil well pump wherein all stages are driven by a common shaft and are axially stacked upon each other and axially clamped together within a fixed diameter cylindrical housing insertable within a well casing, comprising, in combination: a pump impeller securable to said shaft and having generally radially extending vanes; an annular diffusion bowl adjacent said impeller, said bowl having an annular casing portion snugly fitting within the housing wall and surrounding the impeller vanes, the radial thickness of said annular casing portion supporting the effective axial load imposed on the pump stage, said vanes extending radially to terminate closely adjacent the inner wall of said annular casing portion, whereby the pressure developed by the pump stage is maximized, the radially outermost portion of each of said vanes be chamfered in a direction to impart an axial force on the fluid being pumped.

4,278,400

COOLABLE ROTOR BLADE

George J. Yamarik, Vernon, and James L. Levengood, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 5, 1978, Ser. No. 939,767
Int. Cl.[3] F01D 5/18
U.S. Cl. 416—97 R 3 Claims



1. A coolable rotor blade structure of the type including an airfoil section having a leading edge and a trailing edge and having a pressure side wall and a suction side wall forming a leading edge flow region and a trailing edge flow region therebetween, and including a root section having means extending therethrough for flowing cooling air to the leading edge flow region and means extending therethrough for flowing cooling air to the trailing edge flow region, wherein said leading edge flow region and said trailing edge flow region are communicatively joined at a point such that at least a portion of the cooling air flowable to said leading edge flow region is dischargeable into said trailing edge flow region, wherein the improvement comprises:

an ejector at said point of communicative juncture between the leading edge flow region and the trailing edge flow region for drawing the flow of cooling air through the leading edge region.

4,278,401

BLADE FOR WIND MOTORS

Gabriele Martinelli, Piossasco, Italy, assignor to Fiat Societa Per Azioni, Turin, Italy

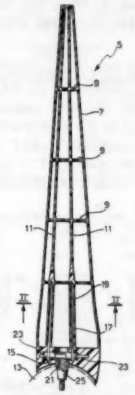
Filed Nov. 21, 1978, Ser. No. 962,731
Claims priority, application Italy, Dec. 5, 1977, 69727 A77
Int. Cl.[3] F03D 1/06; F04D 29/34
U.S. Cl. 416—230 4 Claims

1. Blade for a wind motor, comprising, in combination:

a hollow blade shell of plastics material having a number of internal transverse reinforcing ribs and at least two internal longitudinal reinforcing ribs interconnecting said transverse reinforcing ribs;

a metal reinforcement and attachment member embedded in said plastics material adjacent the radially inner end of the blade;

said metal member having at least two metal arms completely embedded in said longitudinal reinforcing ribs respectively, a metal cross-piece interconnecting said arms completely embedded in said plastics material, and



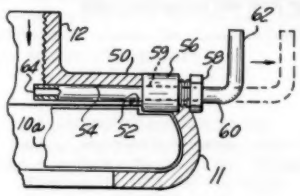
a metal root member attached to said metal cross-piece and projecting longitudinally beyond the radially inner end of the blade for anchoring the blade to a rotor hub.

4,278,402

ADJUSTABLE LIQUID LEVEL CONTROL FOR PUMPS

Axel L. Nielsen, 1316 Elza, Hazel Park, Mich. 48030

Filed Aug. 13, 1979, Ser. No. 66,187
Int. Cl.[3] F04B 49/10
U.S. Cl. 417—38 14 Claims



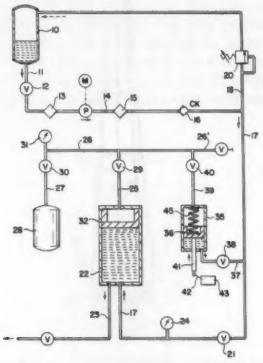
1. An impeller pump and conrol system comprising an impeller-type pump having a housing of circular cross-section for receiving a rotary motor driven impeller, said housing having a central liquid intake opening and a peripheral outlet opening in which while the pump is in operation there is a pressure gradient from a suction condition at the central intake opening to a pressure condition at the peripheral outlet opening of the housing, a pressure responsive switch for controlling the pump motor, and means for communicating pressure as sensed within said housing at different radially selected points along the pressure gradient to said pressure responsive switch comprising a tube having a pressure sensing port adjacent its inner end, said housing having a generally radially facing opening in its peripheral wall in which said tube is longitudinally slidable radially of said housing to position its pressure sensing port at a selected location with reference to said pressure gradient, and conduit means connecting the outer end of said tube to said pressure sensitive switch whereby longitudinal adjustment of said tube produces a corresponding linear adjustment of its pressure sensing port along the pressure gradient existing within said housing between its central inlet and its peripheral outlet.

4,278,403

CONTROL FOR HYDRAULIC ACCUMULATOR SYSTEM

Jon L. Shafer, 13719 Cricket Hollow Dr., Houston, Tex. 77069

Filed Sep. 6, 1979, Ser. No. 72,903
Int. Cl.³ F04B *49/02*
U.S. Cl. 417—38 **5 Claims**



1. In a hydraulic accumulator system having an accumulator tank for storing hydraulic fluid under a piston biased by pressurized gas and a pump for supplying fluid to said tank, a control tank connected at one end to said fluid supply and at the other end to said pressurized gas, a pressure-movable partition element in said control tank having differential areas exposed to said fluid and said gas, and a switch operatively connected to said pump, said partition element having means for actuating said switch to stop the pump immediately when the accumulator tank becomes filled with pressurized hydraulic fluid and to start the pump immediately when said fluid begins to discharge from said accumulator tank.

4,278,404

AUTOINDUCTIVE ELECTROMAGNETIC PUMP AND AUTOINDUCTIVE DIRECT CONVERTER FOR CONDUCTING FLUIDS, PARTICULARLY LIQUID METALS

Pier G. Avanzini, Genoa, Italy, assignor to Nira Nucleare Italiana Reattori Avanzati, Genoa, Italy

Filed Mar. 5, 1979, Ser. No. 17,331
Claims priority, application Italy, Mar. 30, 1978, 12537 A/78
Int. Cl.³ H02K *44/06*
U.S. Cl. 417—50 **10 Claims**

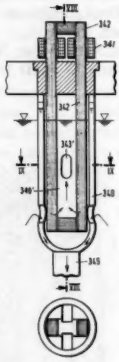
8. An autoinductive electromagnetic pump for pumping electrically conductive fluids, comprising:

a generally toric shell for containing in use an electrically conductive fluid to be pumped;

a magnetic core having a straight portion extending through said toric shell and coinciding with an imaginary axis of revolution of said toric shell;

means for developing an alternating magnetic field within said straight portion of said magnetic core;

means for introducing an electrically conductive fluid into said toric shell; and



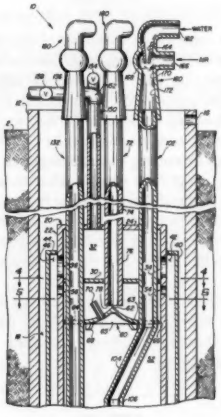
means for defining an outlet for electrically conductive fluid within said toric shell in regions deep within said shell.

4,278,405

ENERGY AMPLIFIER APPARATUS

Lonnie L. Angle, 6204 N. 15th Ave., Phoenix, Ariz. 85015

Filed Jan. 22, 1979, Ser. No. 5,210
Int. Cl.³ F04F *3/00, 5/08*
U.S. Cl. 417—150 **22 Claims**



1. Energy amplifier apparatus, comprising in combination:

a flow of water;

eductor means for entraining air in the flow of water;

first pipe means connected to the eductor means for transporting the flow of water and entrained air from the eductor means;

cylinder means connected to the first pipe means for receiving the flow of water and entrained air and spaced apart downwardly from the eductor means to allow the flow of water to compress the entrained air as the water flows in the first pipe means to the cylinder means;

separator chamber means disposed in the cylinder means and into which the first pipe means extends for receiving the flow of water and the compressed entrained air and having a cylinder wall and a first bulkhead and a second bulkhead secured to the cylinder wall;

cone means disposed adjacent the first pipe means in the

separator chamber means and spaced apart from the first bulkhead and the second bulkhead and from the cylinder wall and the water and entrained and compressed air flows onto the cone means for separating the entrained and compressed air from the water;

second pipe means for transporting the compressed air from the cylinder means; and

aperture means in the separator chamber means through which the water flows out of the separator chamber means.

4,278,406

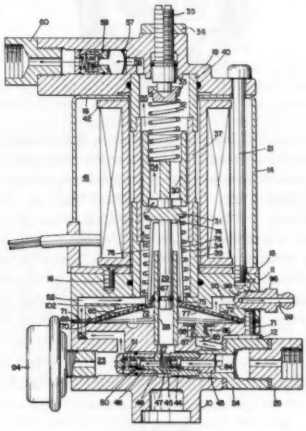
ELECTROMAGNETIC PUMP

Myron T. Cooperrider, North Royalton, Ohio, assignor to R. W. Beckett Corporation, Elyria, Ohio

Filed Nov. 7, 1979, Ser. No. 92,221

Int. Cl.³ F04B *23/10*

U.S. Cl. 417—199 A **16 Claims**



1. In a pump comprising a cylinder, a piston, means for reciprocating the piston within the cylinder, an inlet passage, and a discharge passage associated with the cylinder, an inlet check valve and a discharge check valve controlling said inlet and discharge passages, respectively, whereby fluid in said inlet passage is pumped to said discharge passage when said piston is reciprocated, the improvement which comprises the provision of a diaphragm, means providing a chamber in which said diaphragm is disposed, said chamber being divided by said diaphragm into an intake portion and a discharge portion, valve means permitting flow of fluid from said intake portion to said discharge portion while preventing fluid from flowing from said discharge portion to said intake portion, a diaphragm actuator adapted to move said diaphragm only in the direction in which the volume of the discharge portion is increased and the volume of the intake portion is decreased, a spring adapted to move said diaphragm in the opposite direction in which the volume of said intake portion is increased and the volume of said discharge portion is decreased to discharge fluid therefrom, means providing communication between said discharge portion and said discharge passage associated with said cylinder whereby the diaphragm is subjected to the discharge pressure created by operation of said pump, the diaphragm remaining substantially stationary at a balanced position where force exerted on the diaphragm by the normal discharge pressure of the fluid being pumped by the piston is balanced by the force that the spring exerts on the diaphragm in the opposite direction, the displacement per stroke of the diaphragm being substantially greater than the displacement per stroke of the piston in the cylinder, whereby the pump is capable of pumping at low discharge pressure a volume of fluid equal to the sum of the displacements of the diaphragm and of the piston on each stroke thereof, the diaphragm becoming substantially inactive and the pump discharging only the fluid displaced by the piston when the diaphragm becomes substantially stationary as aforesaid.

4,278,407

DEVICE FOR CONTROLLING AN AMOUNT OF FUEL INJECTION IN A DIESEL ENGINE

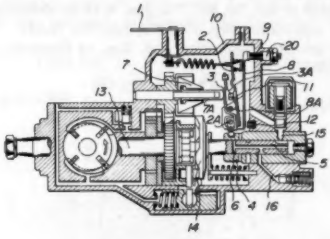
Seishi Yasuhara, Yokosuka; Tsuyoshi Tamazawa, and Katsuto Yamauchi, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Aug. 7, 1979, Ser. No. 64,433

Claims priority, application Japan, Oct. 27, 1978, 53-148102[U]

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—292 **4 Claims**



1. A device for controlling an amount of fuel injection in a diesel engine comprising a distribution type fuel injection pump having a pump plunger including a sleeve for controlling the amount of fuel injection being displaced by a lever, and an adjusting screw portion for adjusting an initial position of said lever, wherein the improvement comprises a heat sensitive element for responding to fuel temperature mounted on a mechanical coupling mechanism between said adjusting screw portion and the lever, wherein the amount of fuel injection is adjusted as a function of temperature rise.

4,278,408

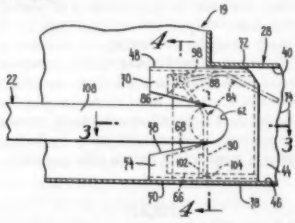
MANURE TRANSFER PUMP

William L. Rammer, and Paul D. Swanson, both of Kaukauna, Wis., assignors to Badger Northland Inc., Kaukauna, Wis.

Filed Sep. 10, 1979, Ser. No. 74,203

Int. Cl.³ F04B *21/04*

U.S. Cl. 417—551 **2 Claims**



1. A manure transfer pump including a pump cylinder mounted in the bottom of a manure collection hopper in the floor of a livestock confinement area, a pump cylinder inlet end opening into the manure collection hopper and a pump cylinder exit end, a pipe with an inlet connected to the pump cylinder outlet and an outlet capable of discharging manure into a manure storage facility characterized by a piston slideably mounted in the pump cylinder and including a top wall, side walls and a bottom wall, on open rod end, an open head end, trunnion surfaces on the piston walls, a connecting rod pivot-

ally connected to the piston and in contact with the trunnion surfaces, a pump drive connected to the connecting rod, a gate assembly pivotally connected to the inside of the piston walls in the center section of the piston, a stop surface on the piston walls operable to hold the gate assembly in an open position and a stop surface on the piston walls operable to hold the gate assembly in a closed position and wherein the trunnion surfaces on the piston walls have a transverse axis in the center section of the piston and the pivotal connection for the gate assembly is located adjacent one wall of the piston and between the transverse axis of the trunnion surfaces and the rod end of the piston.

4,278,409

COMPRESSOR

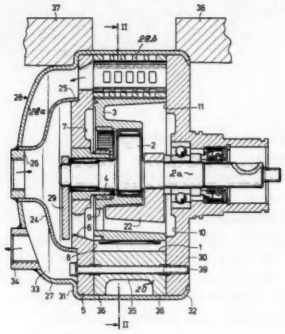
Dankwart Eiermann, Lindau, Fed. Rep. of Germany, assignor to Borsig GmbH and Wankel GmbH, both of Berlin, Fed. Rep. of Germany, a part interest

Continuation of Ser. No. 867,770, Jan. 9, 1978, abandoned. This application Sep. 25, 1979, Ser. No. 78,681

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1977, 2700522

Int. Cl.³ F04C *29/00*

U.S. Cl. 418—61 A **9 Claims**



1. A rotary piston compressor which includes: a main housing part composed of a plurality of interconnected components, one of said components having a trochoidal two-arc shaped inner surface forming a race way, a rotatable eccentric shaft provided with an eccentric, a triangular piston rotatable on said eccentric and having its corners in continuous sliding engagement with said race way, and a counter weight mounted on said eccentric shaft and located within said piston, a capsule housing, and a dome-shaped cover, said capsule housing on one side of said compressor having a pressure connection arranged in said dome-shaped cover, said compressor having a high pressure section and a low pressure section, said cover comprising a hood having at least its major portion arranged within said cover and separating said high pressure section from said low pressure section, said cover including a central member forming a connection for an inlet conduit.

4,278,410

ROTATABLE PNEUMATIC GEAR MOTOR HAVING A DEFORMABLE ADJUSTABLE SEALED CHAMBER

Alain de Gaillard, Paris, France, assignor to Umicum S.A., St. Etienne Loire, France

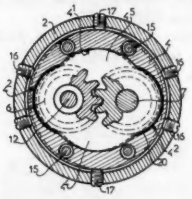
Filed May 24, 1979, Ser. No. 42,033

Claims priority, application France, May 30, 1978, 78 16949

Int. Cl.³ F01C *5/06, 1/18, 19/00*

U.S. Cl. 418—108 **10 Claims**

1. A pneumatic rotary gear motor comprising a body or casing, a bracer bushing secured to said casing, a cover closing said bracer bushing, a deformable internal bushing freely housed within the bracer bushing and interposed between the cover and the casing, said internal bushing having a bore and two opposed longitudinal circular recesses extending from said bore, two intermeshed rotary gears extending longitudinally in said internal bushing and centered in a respective recess, said gears having teeth sealably contacting the internal bushing along said circular recesses, said gears having shafts respectively supported for rotation in said cover and casing to form opposed working chambers in said internal bushing disposed on either side of the recesses and in communication with openings provided in the cover for the intake and exhaust of a fluid; adjusting means integral with the bracer bushing for abutting



against the internal bushing to produce deformation thereof at the recesses for effecting sealed contact with said teeth; fixed abutment means, said abutment means being adapted to cooperate with said freely housed internal bushing through said bracer bushing for limiting the deformation of the internal bushing; an assembling means for the cover, bracer bushing, and casing including screws which are passed freely through holes provided in the internal bushing so that the deformation thereof will not be interfered with; and frictional means interposed between the ends of the gears, the ends of the deformable bushing and the cover and casing on the one hand, and between the circular recesses of said internal bushing in contact with the teeth of said gears on the other hand.

4,278,411

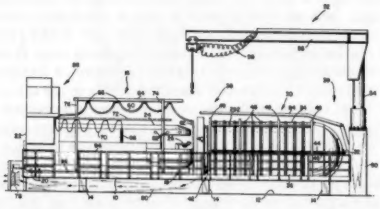
APPARATUS FOR MAKING LARGE FIBERGLASS STRUCTURES

Stephen W. Anderson, 1441 S. Monaco St. Pkwy., Denver, Colo. 80224

Filed Dec. 30, 1977, Ser. No. 866,013

Int. Cl.³ B29D *23/03*

U.S. Cl. 425—100 **66 Claims**



1. Apparatus for making a larger fiberglass structure, which comprises:

a mold having an open end;

carriage means for accommodating an operator and which includes means for applying raw materials to the interior surface of said mold;

means for selectively reciprocating said carriage means and said operator into and out of said mold; and

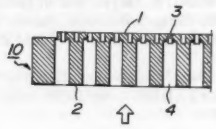
means for rotating said mold.

4,278,412

EXTRUSION DIE ASSEMBLY FOR FORMING HONEYCOMB STRUCTURES

Sei Ozaki, Nagoya, and Shuichi Otsu, Konan, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 880,129, Feb. 22, 1978, abandoned. This application Jun. 12, 1979, Ser. No. 47,864
Claims priority, application Japan, Feb. 24, 1977, 52/18634
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—198 **7 Claims**



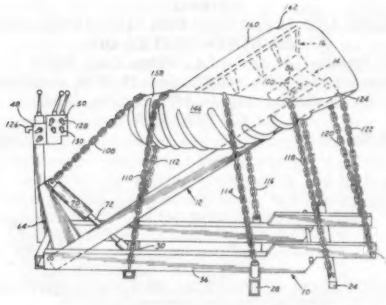
1. In an extrusion die assembly for forming honeycomb structures comprising a die including a discharge surface provided with grid-shaped slits for discharging honeycomb structures composed of interconnecting thin partitions and an inlet surface provided with a plurality of independent feed inlets communicating with the grid-shaped slits and a mask having an orifice of a given diameter, by which an outer shape and a dimension of the honeycomb structure are determined, said mask being adjacent to the grid shaped slits in a discharge direction and surrounding a periphery of the discharge surface, the improvement comprising providing at least one ring having an orifice of a given diameter surrounding a periphery of the inlet surface, said orifice of the ring restraining the supply of a batch material to the feed inlets at the periphery of the inlet surface and the ring and the mask being aligned with each other in the discharge direction, wherein said ring contacts the inlet surface and closes the feed inlets at the periphery of the inlet surface, and wherein the strength of the periphery portion of the honeycomb structure varies according to the diameter difference of the orifices of the mask and the ring.

4,278,413

APPARATUS FOR INVERTING TIRES

Merlyn R. Hilt, St. Francis, Kans., assignor to Hilt Tire Feedbunk, Inc., St. Francis, Kans.

Filed Sep. 20, 1979, Ser. No. 76,970
Int. Cl.³ B29C *17/00, 21/00*
U.S. Cl. 425—383 **14 Claims**



1. Apparatus for inverting a tire having a first side and an axially spaced second side, comprising:

tire holding means for holding said tire on said first side;

grappling means for circumferentially holding an edge of the second side of the tire relative to movement of said tire on said tire holding means, said grappling means being fixed relative to the tire molding means;

first tire moving means for moving said tire, on said tire holding means, in a first direction relative to said grappling means to axially displace a first edge portion;

second tire moving means for moving said tire, on said tire holding means, in a second direction relative to said grappling means to axially displace a second edge portion;

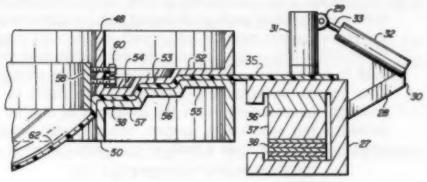
said first edge portion and said second edge portion together constituting the entire edge, whereby the edge is axially displaced relative to the first side to invert the tire.

4,278,414

APPARATUS FOR MAKING PLASTIC SKYLIGHTS

Kent A. Weisner, Orlando, and Lester L. Walls, Jr., Deltona, both of Fla., assignors to Kennedy Sky-Lites, Inc., Orlando, Fla.

Filed Feb. 16, 1979, Ser. No. 12,822
Int. Cl.³ B29C *17/00*
U.S. Cl. 425—388 **6 Claims**



1. Apparatus for molding skylights from polycarbonate polymer sheets comprising:

heated clamping means for clamping the perimeter of a polycarbonate polymer sheet and for preheating said perimeter to a first selected temperature;

a loading station means for temporarily receiving said heated clamping means to permit insertion of a polycarbonate polymer sheet into said heated clamping means and for clamping and preheating the perimeter of said sheet to thereby form a skylight flange;

heating station means adjacent said loading station means for receiving said heated clamping means subsequent to preheating of said perimeter and for heating said polycarbonate polymer sheet and said perimeter to a second selected temperature higher than said first selected temperature;

forming station means adjacent said heating station means for receiving said heated clamping means subsequent to heating of said sheet and said perimeter to said second selected temperature;

a pair of coacting perimeter molds within said heated clamping means, each of said molds having a plurality of coacting steps therein to form steps in a skylight dome perimeter within said flange, said molds forming an open dome-forming area in the center of said sheet for vacuum forming a dome therein;

a push member removably mounted to said mold around the inner edge thereof and extending along the mold edge for driving a pushed area along said dome perimeter when said molds are closed; and

vacuum forming means for applying a vacuum to one face of said open dome-forming area to produce a dome in said center of said heated sheet;

whereby said apparatus molds a skylight having a flat outer flange, a stepped perimeter within said flange, a push within said stepped perimeter and a dome above said push.

4,278,415
APPARATUS FOR MELT SPINNING HOLLOW FIBERS

Ronald E. Pfeiffer, Pensacola, Fla., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 21, 1979, Ser. No. 13,353
Int. Cl.[3] A01J 21/00
U.S. Cl. 425—466 2 Claims

1. A spinnerette assembly for spinning hollow fibers which comprises in combination

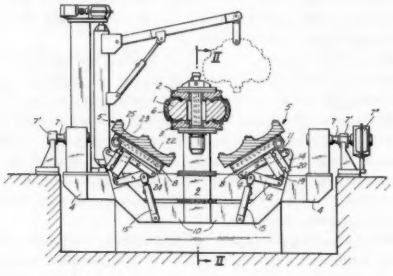
a. a spinnerette plate containing a plurality of orifices with a counterbore for each orifice and,

b. removable pins positioned within each orifice-counterbore combination, each pin being of solid construction and having an upper portion positioned within said counterbore and a lower portion positioned within said orifice, said upper portion occupying a fixed position within said counterbore and enabling spinning composition to flow through the counterbore to the orifice at operative back pressure and said lower portion being spaced from the orifice wall to provide a hollow extrudate.

4,278,416
APPARATUS FOR MOLDING TIRES OF MOTOR VEHICLES

Erich Grünner, Voltagasse 43/23/1, 1210 Wien, Austria

Filed Jul. 17, 1978, Ser. No. 925,464
Claims priority, application Austria, Jul. 15, 1977, 5151/77
Int. Cl.[3] B29F 1/00; B29H 5/02
U.S. Cl. 425—577 7 Claims

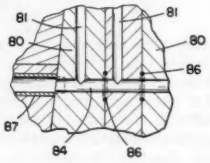


1. In an apparatus for molding tires of vehicles, especially motor vehicles, a combination comprising support means; a multi-part mold mounted on said support means and comprising a stationary rigid core having an axis and opposite ends and being shaped in accordance with the inner surface of the tire to be molded and a plurality of mold parts shaped in accordance with the outer surface of the tire and including a pair of mold end parts coaxially arranged with said axis of said core and abutting with surface portion thereof respectively against said opposite ends of the latter, at least one of said end parts being movable in axial direction relative to said core, and a plurality of mold segment means about said core shaped to define with said end parts the outer surface of said tire to be molded; a plurality of segment carriers respectively carrying said mold segment means; first moving means connected to said segment carriers for moving the same in radial direction relative to said core; and second moving means connected to said segment carriers for tilting the same toward and away from said core, said first and second moving means operating independent from the movement of said at least one mold end part.

4,278,417
INTERNALLY LOCKED CORE CENTERING MOLD ASSEMBLY

Robert W. Wilds; Robert E. Meyer, both of Indianapolis; Walter A. Grannen, III, Bargersville, and Dannie Bryant, Greenwood, all of Ind., assignors to E. W. Mold & Tool Co. Inc., Indianapolis, Ind.

Filed Dec. 31, 1979, Ser. No. 108,517
Int. Cl.[3] B29C 1/06; B29F 1/022
U.S. Cl. 425—577 8 Claims

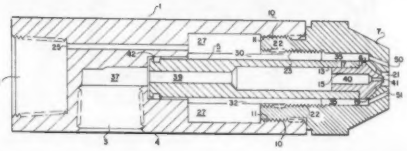


1. In a mold assembly particularly adapted for the injection molding of thin-walled multi-partitioned containers requiring a relatively lengthy cantilever-mounted array of cores extending into the cavity member and having means adjacent the free ends of said cores for injection of plastic material into the space between the cavity member and the cores, wherein the improvement comprises internal core locking members reciprocally moveable in transverse bores formed in certain of the cores intermediate their ends, said members being moveable within their bores from a retracted position substantially flush with the side faces of their respective cores to an extended position in locking engagement with the side faces of the next adjacent cores, a longitudinal bore in the cores intersecting the corresponding transverse bore therein and actuating means within said longitudinal bore cooperating with said locking members for moving them between their retracted and extended positions to place the cores in transverse compression at predetermined times during the injection molding cycle.

4,278,418
PROCESS AND APPARATUS FOR STOICHIOMETRIC COMBUSTION OF FUEL OIL

Lynn A. Strenkert, 16 Azalea La., Wilton, Conn. 06897

Continuation of Ser. No. 640,978, Dec. 15, 1975, abandoned.
This application Aug. 24, 1979, Ser. No. 69,362
Int. Cl.[3] F23C 5/00
U.S. Cl. 431—8 22 Claims



1. In a process for the combustion of liquid fuel wherein the liquid fuel is atomized prior to combustion, the improvement therein including carrying out the atomization of the fuel in at least two stages comprising mixing the fuel and atomizing gas such as air within an atomization nozzle to obtain primary

atomization, causing the atomized fuel and air mixture to exit the nozzle as an extending conically shaped stream containing fuel droplets, directing a plurality of individual jets of further atomizing air originating at locations which are in a plane which also contains the location where the atomized fuel and air mixture exits the atomization nozzle to converge on the conically shaped atomized fuel stream and intersect therewith downstream of the location where the atomized fuel and air mixture exits the atomization nozzle to obtain secondary atomization causing the fuel droplets therein to be reduced in size the convergence angle of the air jets with the atomized fuel stream, as measured between the axis of the air jets and the longitudinal axis of the conically shaped atomized fuel stream, ranging from 3.5° to 7° and controlling the size of the air jets and the angle and point of convergence of the air jets with the atomized conical stream and the fuel feed in accordance with a predetermined relationship including varying the convergence angle inversely with the fuel feed rate.

4,278,419

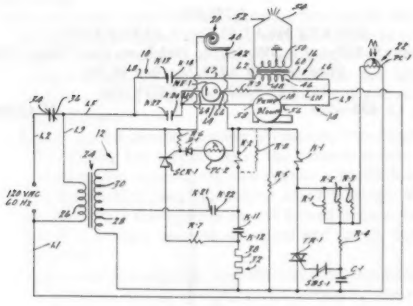
PRIMARY OIL BURNER SAFETY CONTROL AND INTERMITTENT IGNITION SYSTEM

Jon H. Bechtel, and Frederick J. Geary, both of Holland, Mich., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 30, 1979, Ser. No. 34,643

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—24 **7 Claims**



1. A primary safety control system for an oil burner, said system comprising, in combination, a high voltage circuit connected to said oil burner, a low voltage control circuit including a relay having contacts in said high voltage circuit controlling the energization of said oil burner, thermostatic switch means in said low voltage control circuit controlling the energization of said relay, means monitoring the open and closed state of said relay contacts with respect to the open and closed state of said thermostatic switch means, and means effective to open said high voltage circuit when the state of said relay contacts differs with respect to the state of said thermostatic switch means, said monitoring means including an optical coupler comprising a light source and a photoelectric cell, said light source being connected to said high voltage circuit in parallel with said oil burner, said photoelectric cell being connected in said low voltage control circuit.

4,278,420

PHOTOFLASH LAMP, METHOD OF MAKING SAME, AND PHOTOFLASH CIRCUIT

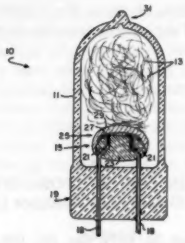
Andre C. Bouchard, Peabody, and Naila S. Jirmanus, Somerville, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 16, 1979, Ser. No. 57,770

Int. Cl.³ F21K *5/02*

U.S. Cl. 431—362 **22 Claims**

1. In a photoflash lamp including a hermetically-sealed, light-transmitting envelope having a combustion-supporting atmosphere and a quantity of filamentary combustible material therein, and an ignition means for igniting said combustible material including a pair of spaced electrical conductors and a primer mass, each of said conductors sealed within said envelope and projecting therefrom and having an end portion having access to the interior of said envelope, the improvement wherein said primer mass comprises:



a first quantity of pulsed, substantially non-ignitable primer material positioned in electrical contact with both of said end portions of said electrical conductors; and

a second quantity of readily ignitable primer material located in physical contact with at least a portion of said first quantity of primer material.

4,278,421

INDUSTRIAL FURNACES FOR THE HEAT TREATMENT OF METALLIC WORKPIECES

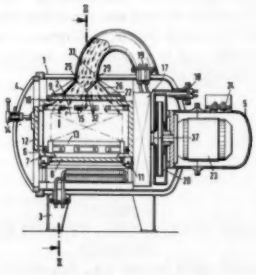
Ferdinand Limque, Berg en Dal, Netherlands, and Hans Bertrand, Goch, Fed. Rep. of Germany, assignors to Ipsen Industries International Gesellschaft mit beschränkter Haftung, Kleve, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 85,083

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844843

Int. Cl.³ F27B *9/04*

U.S. Cl. 432—152 **12 Claims**



1. An industrial furnace, particularly a single-chamber vacuum furnace, for heat treatment of metallic workpieces, comprising

a furnace housing formed with a heating chamber inside said furnace housing,

means comprising heating elements for heating said heating chamber,

a bottom and a top of said heating chamber is formed with a closable chamber opening directly exposed to said heating chamber for the passage of a quenching gas,

means including a blower and connections for circulating the gas substantially vertically downwardly through said chamber opening and said heating chamber,

said chamber opening in said top being a gas entrance chamber opening for the incoming flow of gas,

a closing slide disposed above the gas entrance chamber opening and constituting means for closing said gas entrance chamber opening,

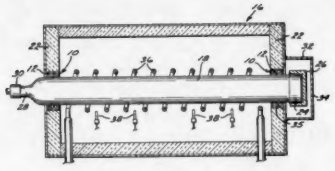
means comprising a flap swingably mounted adjacent the gas entrance chamber opening, said flap means for cooperating with said gas entrance opening to alternately open and close different cross-sections thereof for controlling the incoming flow of gas in the vicinity of an exposed cross-section of the gas entrance chamber opening.

4,278,422

DIFFUSION TUBE SUPPORT COLLAR

David L. Thompson, Orange, Calif., assignor to David M. Volz, Santa Ana, Calif.

Filed Dec. 31, 1979, Ser. No. 108,553
Int. Cl.³ F27B *7/00;* **B65D** *53/00;* **F02F** *11/00*
U.S. Cl. 432—188 **16 Claims**



1. An annular collar for supporting and positioning a diffusion tube in a furnace relative to the walls of the furnace, said furnace being used in the manufacture of semiconductors, integrated circuits and the like, the collar comprising:

a resilient core capable of withstanding high temperatures normally used in the furnace, and

an outer resilient sheath covering the core and being made of a material capable of withstanding high temperatures normally used in the furnace, the collar being dimensioned to tightly fit around the circumference of a predetermined diffusion tube and to fit within an aperture provided in a support member of the furnace.

4,278,423

HEATING AND VENTILATING SYSTEM FOR POULTRY HOUSES

Frank J. Siccardi, 2850 Inwood La., Fayetteville, Ark. 72701

Filed Nov. 27, 1979, Ser. No. 97,612
Int. Cl.³ F24H *1/00;* **F27B** *9/14*
U.S. Cl. 432—222 **8 Claims**

1. A heating-ventilating system for a poultry house comprising

an air duct having an air intake and an exhaust opening,

a fan mounted therein,

a fuel burner mounted in said duct,

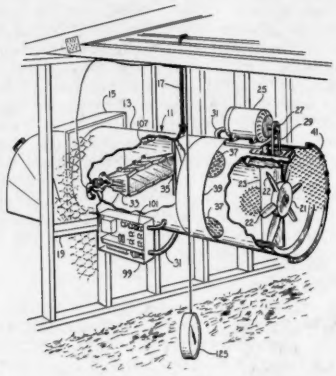
a starter fuel jet and an electric igniter therefor,

a first temperature sensor adapted to be placed in said poultry house out of the direct air flow from said fan,

means for controlling said starter fuel jet and electric igniter to operate only in response to a low temperature condition of said first temperature sensor,

means for controlling said fan to operate in response to said first temperature sensor,

a flame sensor in proximity to said starter fuel jet, and



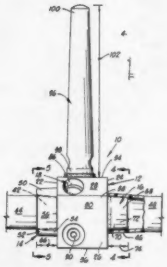
a valve for said fuel burner and control means for opening said valve responsive to said flame sensor.

4,278,424

SOCKET HEAT FUSION APPARATUS

Charles S. Villyard, 8 NW. 8th St., Oklahoma City, Okla. 73102

Filed Nov. 19, 1979, Ser. No. 95,246
Int. Cl.³ F24J *3/00;* **F27D** *5/00*
U.S. Cl. 432—224 **17 Claims**



1. An apparatus for simultaneous heating one end portion of a thermoplastic conduit and one end portion of a thermoplastic coupler utilizing a heat source such that the heated end portion of the thermoplastic conduit can be disposed in the heated end portion of the coupler and provide a substantially fluid-tight union therebetween, the apparatus comprising:

a body member having a first heat communication opening and a second heat communication opening, the first heat communication opening adapted to receive heat from the heat source, the second heat communication opening extending between one side of the body member and another side of the body member, the first heat communication opening intersecting the second heat communication opening such that fluid communication is established therebetween;

a first receptacle disposed on the one side of the body member, the first receptacle adapted to receive the one end portion of the thermoplastic conduit, the first receptacle opening communicating with the second heat communication opening; and

a second receptacle disposed on the other side of the body member, the second receptacle adapted to receive the one

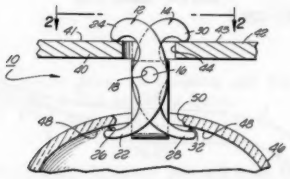
end portion of the second thermoplastic coupler, the second receptacle opening communicating with the second heat communication opening.

4,278,425

CERAMIC KILN SUPPORT APPARATUS

Farrokh Hirbod, 149 N. Rexford Dr., Beverly Hills, Calif. 90210

Filed Apr. 21, 1980, Ser. No. 141,859
Int. Cl.[2] F27D *5/00*
U.S. Cl. 432—259 **4 Claims**



1. A ceramic support apparatus for supporting and holding a ceramic article having a support lip in a kiln having an elevated first support flange and an elevated second support flange horizontally spaced from the first support flange while the ceramic article is being fired, the ceramic support apparatus comprising:

a first bowed ceramic member having a first hooked end for engaging the support lip of the ceramic article at a first region, a second hooked end for hooking over the first support flange and a first orifice through the first bowed ceramic member at a location between the first and second hooked ends;

a second bowed ceramic member having a third hooked end for engaging the support lip of the ceramic article at a second region opposite the first region, a fourth hooked end for hooking over the second support flange, and a second orifice through the second bowed ceramic member at a location between the third and fourth hooked ends; and

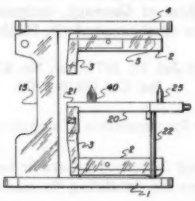
a ceramic rod extending through the first and second orifices for pivotally mounting the first and second bowed members to the ceramic rod, with the direction of bowing of the first bowed ceramic member being opposite to the direction of bowing of the second bowed ceramic member.

4,278,426

RELATOR ASSEMBLY

Robert Schwartz, 1271 Westfield Ave., Rahway, N.J. 07065

Filed Mar. 7, 1980, Ser. No. 128,046
Int. Cl.[3] A61C *11/00*
U.S. Cl. 433—54 **4 Claims**



1. A relator assembly useful for making maxillary denture materials comprising:

(a) a stand member;

(b) a vertically disposed support means having an upper and lower portion, said upper and lower portions being in a fixed vertical relationship relative to each other, said lower portion connected to said stand member;

(c) an occlusal base member having a horizontally disposed upper surface and adapted to be located above said stand member;

(d) an arch locator, removably positionable on said upper surface of the occlusal base member, adapted to locate artificial teeth, denture elements or bite block elements in a fixed position and in an arch-shaped arrangement on said occlusal base member;

(e) adjustment means associated with said occlusal base member adapted to movably locate said arch locator on the upper surface of said occlusal base member;

(f) a maxillary base member having an upper and lower surface, connected to the upper portion of said support means, the lower surface of said maxillary base member adapted to be positioned in substantial vertical alignment with said occlusal base member; and

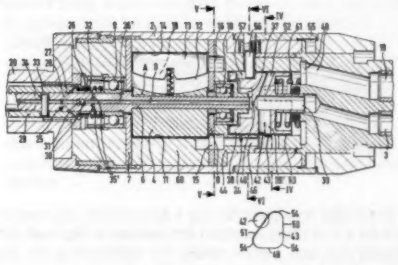
(g) cast positioning means located on the lower surface of said maxillary base member.

4,278,427

COMPRESSED-AIR DENTAL MOTOR

Bernhard Lingenhöle, Biberach, and Ernst Strohmaier, Bad Schussenried, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Fed. Rep. of Germany

Filed Sep. 7, 1979, Ser. No. 73,294
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 2839632
Int. Cl.[3] A61C *1/02*
U.S. Cl. 433—100 **5 Claims**



1. A compressed-air dental motor comprising: a housing; a rotor; a compressed air inlet conduit supplying compressed-air for placing said rotor into rotation; a rotor shaft in said rotor connectable with a work tool, such as a drill; valve means in said housing associated with said compressed-air inlet conduit for varying the inlet of compressed air per unit of time; and adjusting means for controlling said valve means; the improvement comprising: said rotor shaft including an axially displaceable first component (**26**) arranged intermediate said rotor (**4**) and the end of said rotor shaft proximate the work tool (**5**) for controlling said valve means (**24**) in direct mechanical dependence upon the torque at said work tool (**5**) so as to form said adjusting means into a torque-dependent adjusting means, said axially displaceable component (**26**) including first contact surfaces or cam tracks (**27**), and a further component (**29**) arranged on said rotor shaft (**6**) for limited rotation but which is not axially displaceable including complementary contact surfaces or cam tracks (**28**) cooperating with said first contact surfaces or cam tracks to effect axial displacement of said first component (**26**) and to transmit the rotation of said rotor shaft (**6**) to said work tool (**5**); said rotor shaft having a control air passageway (**36'**) extending from the end opposite said work tool to the region of said rotor shaft covered in the engaged position of said first component (**26**) and said further component (**29**); said control air passageway (**36'**) including at least one radial outlet passageway (**35'**) in said region whereby the

outlet of said outlet passageway (35') in the engaged position is adapted to be covered by said first component (26) for venting the control air into the atmosphere and in the disengaged position of said components for actuating said valve means (24), said valve means comprising an axially movable piston-like valve member (38) having a displacement chamber (37), said control air passageway (36') communicating with said displacement chamber (37), said valve means (24) including a compressed air inlet conduit communicating with the work space of said motor and being constantly connected with a compressed-air inlet conduit of said motor; and a branch passageway (40) of said compressed-air inlet passageway for said valve member which is in communication with the control air passageway (36') when the outlet of said radial outlet passageway (35') is open, and when the opening of said radial passageway (35') is covered, compressed air from branch passageway (40) fills said displacement chamber (37) so as to effect an axial movement of said piston-like valve member (38) to increase the compressed air delivered to the work space of the motor per unit of time.

4,278,428

DENTAL HANDPIECE

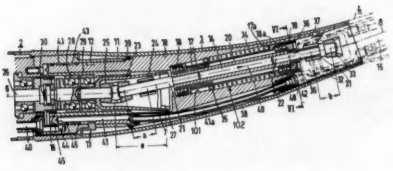
Reinhard Straihammer, Einhausen; Hans J. Klose, Hamsbach, and Werner Schuss, Heppenheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 4, 1979, Ser. No. 100,000

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855797

Int. Cl.³ A61C *1/08*

U.S. Cl. 433—105 **26 Claims**



1. In a dental handpiece having a drive motor, an acceptance socket for a tool being mounted for rotation in the head part of the handpiece, and a drive means for transmitting the rotary motion of said drive motor to said acceptance socket, said drive train means including at least two drive shaft sections with the axis of a pair of said sections being arranged at an angle to one another, the first drive shaft section of the pair having a first and second coaxial drive gears with each gear having a different number of teeth, the second drive shaft section of said pair having at least one gear, and means for selectively forming a first coupling and a second coupling between the first and second shaft sections, said first coupling having the first gear of the first shaft section being in engagement with a gear on the second shaft section and the second gear being out of engagement and the second coupling being formed by the second gear of the first shaft section being in engagement with a gear on the second shaft and the first gear being out of engagement, said first coupling having a different drive ratio between the first and second shafts than the drive ratio for the second coupling, the improvements comprising said means for selectively forming the first and second couplings including means for mounting one of said first and second shaft sections for axial movement between a first position forming the first coupling and the second position forming the second coupling, and means for axially displacing said one shaft section between said first and second position, said one shaft section being arranged between a drive shaft section coupled to the drive motor and the head part of the handpiece and having at least one gear at each of the two ends, each of said gears at each end of the one shaft section being in engagement with a gear during at least one of said first and second coupling positions.

4,278,429

DENTAL HANDPIECE

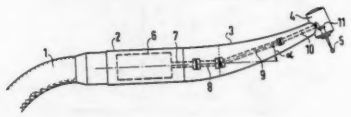
Reinhard Straihammer, Einhausen, and Werner Schuss, Heppenheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 18, 1979, Ser. No. 104,979

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855720

Int. Cl.³ A61C *1/08*

U.S. Cl. 433—126 **10 Claims**



1. In a dental handpiece having a drive motor part with a drive motor, a handpiece housing connected to the drive motor part, a head part with a socket for supporting a tool for rotation being releasably secured on the housing and drive train means received in the housing for transmitting rotary motion of the drive motor to said socket, the improvement comprising the handpiece housing being composed of a first housing member supporting a first drive shaft section and a second housing member supporting a second drive shaft section, each of said drive shaft sections being part of the drive train means and having gears disposed at their ends for engagement with adjacent drive shaft sections, means for interconnecting said first and second housing members for swivel movement between a first position with the first and second drive shaft sections having their gears in engagement and extending at an angle to each other and a second position with the first and second drive shaft sections having their gears in engagement and being axially aligned, means for selectively holding said housing members in a selected one of the first and second positions, and said head part having a sleeve of a configuration to telescopically cover the second housing member and the majority of the first housing member while the members are held in one of said first and second positions, said sleeve having and interior engaging a portion of the means for holding to activate said means for holding so that by changing the head part with another head part having a sleeve with a different configuration, said handpiece can be converted between an angled handpiece and a straight handpiece.

4,278,430

SIGNAL SIMULATOR

Siegfried Bauer, Heidelberg, and Dieter Burckhart, Wiesloch, both of Fed. Rep. of Germany, assignors to Eltro GmbH Gesellschaft Fur Strahlungstechnik, Heidelberg, Fed. Rep. of Germany

Filed Jul. 13, 1977, Ser. No. 818,991

Int. Cl.³ G09B *9/00*

U.S. Cl. 434—2 **12 Claims**

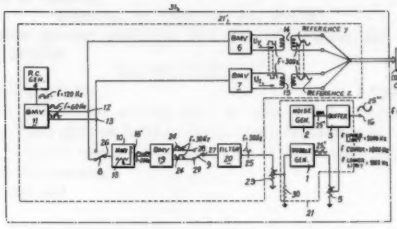
1. A simulator for simulation of signals of a target radiator comprising:

first free-running frequency generator means operating at a first frequency for simulating the intensity fluctuations of a target radiator;

amplitude regulation means connected to said free-running generator means for controlling the amplitude of said first frequency;

second free-running generator means operating at a second frequency lower than said first frequency for simulating

the amplitude and phase of a vectorial target representation means; and



frequency divider means for coupling said first generator means to said second generator means.

4,278,431

HYDRO-JET PROPULSION DEVICE FOR DRIVING AND CONTROLLING OF PARTICULARLY FLAT-BOTTOMED WATERCRAFTS

Franz Krautkremer, Spay, and Gerd Krautkraemer, Boppard-Buchenau, both of Fed. Rep. of Germany, assignors to Schottel-Werft. Josef Becker GmbH & Co. KG, Spay, Fed. Rep. of Germany

Filed Dec. 11, 1978, Ser. No. 968,430

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757454

Int. Cl.[3] **B63H** *11/02*

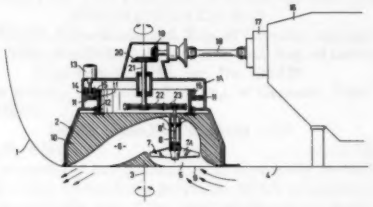
U.S. Cl. 440—42 **7 Claims**

1. A hydro-jet propulsion device for driving and controlling shallow draught watercraft, comprising:

hull means;

means defining a downwardly opening recess in a bottom surface of said hull means, said opening having a central vertical axis and an inner surface contour over the entire axial extent thereof which is concentric with said central vertical axis;

elbow means and support means for rotatably supporting said elbow means in said downwardly opening recess and for movement about an axis of rotation which is coaxial with said central vertical axis, said elbow means having a bottom surface which is generally flush with the outer surface of said hull means, said elbow means additionally having a radially outer surface contour conforming to the contour of said inner surface of said downwardly opening recess and being spaced slightly radially inwardly therefrom, said elbow means having means defining a passageway therethrough, said passageway having first and second segments, each of said segments having a longitudinal axis inclined to said axis of rotation of said elbow means, each of said first and second segments opening outwardly of said bottom surface of said elbow means and at locations whereat the central axes of the two openings in said bottom surface of said elbow means are spaced radially outwardly from said axis of rotation of said elbow means; and



propeller pump means and drive means therefor, said propeller pump means being mounted in said first segment of said passageway for drawing in water through one of said two openings in said bottom surface and ejecting water from the other of said two openings in said bottom surface, the axis of rotation of said propeller pump means being inclined to said axis of rotation of said elbow means, said drive means including means facilitating a drive of said propeller pump means about said inclined axis of rotation thereof.

4,278,432

SOAKING METHOD

Rolf Monsheimer, and Ernst Pfleiderer, both of Darmstadt, Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 167,709

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1979, 2929844

Int. Cl.³ C14C *1/04*

U.S. Cl. 8—94.18 **4 Claims**

1. A method for soaking skins or hides which comprises soaking said skins or hides in an acid bath containing at least one compound selected from the group of compounds having one of the formulas

R—SH and

wherein R is alkyl having 2 to 3 carbon atoms, alkyl having 2 or 3 carbon atoms mono-substituted with a thiol or OH group, or R is $-(CH_2)_n-(CHR_1)-COOH$ wherein R_1 is hydrogen or alkyl having 1 to 6 carbon atoms or is an amino group and n is an integer from 0 to 6, or R is R_2CO wherein R_2 is alkyl having 1 to 6 carbon atoms or phenyl, and wherein R′ is hydrogen, alkyl having 1 to 6 carbon atoms, or amino.

4,278,433

RESIST PRINTING PROCESS

Adolf Blum; Siegmar Lukas; Hermann Schwab, all of Ludwigshafen, and Rolf Strobel, Niederkirchen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 18, 1980, Ser. No. 141,404

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1979, 2916673

Int. Cl.³ D06P *5/12*

U.S. Cl. 8—449 **9 Claims**

1. In an improved process for the production of resist prints under reactive dyes on textile materials which consist of cellulose fibers or of blends of these with other fibers, by padding, pre-printing or overprinting the textile material with a padding liquor or print paste which contains a resist, the improvement which comprises said resist being the reaction product of a bisulfite adduct of an aldehyde of 2 to 6 carbon atoms, or of a ketone, with ammonia or a primary or secondary amine, in the molar ratio of from 3:1 to 1:1.

4,278,434

TRANSFER PRINTING PROCESS AND PRINTING INKS AND TEMPORARY SUPPORTS FOR CARRYING OUT THIS PROCESS

Friedrich W. Kröck, Cologne; Rütger Neeff, Leverkusen, and Robert Kuth, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

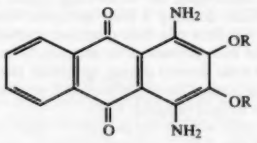
Filed Feb. 11, 1980, Ser. No. 120,190

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1979, 2907724

Int. Cl.³ B41M *5/26*

U.S. Cl. 8—471 **10 Claims**

1. Process for printing materials, preferably synthetic or partially synthetic polymeric materials, in accordance with the transfer printing principle, characterised in that dyestuffs of the formula



wherein R represents a straight-chain or branched alkyl radical which has 1 to 5 carbon atoms and can optionally be substituted by 1 to 3 fluorine or chlorine atoms or hydroxyl or methoxy groups, are used.

4,278,435

PROCESS FOR THE PARTIAL METALLIZATION OF TEXTILE STRUCTURES

Harold Ebneth, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,411

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1979, 2910460

Int. Cl.³ D06Q *1/04;* **B41M** *5/26*

U.S. Cl. 8—471 **1 Claim**

1. A process for the production of a partially metallized textile structure of synthetic polymers, which comprises rendering the particular side of the fabric which is not to be metallized hydrophobic or inactive by printing it with thermodiffusion dyes before the metal treatment by currentless metal deposition.

4,278,436

DYEING PROCESS

Werner Marschner, and Heinz Minwegen, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 6, 1979, Ser. No. 17,951

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2809675

Int. Cl.³ C09B *62/00;* **D06P** *3/66*

U.S. Cl. 8—549 **8 Claims**

1. Process for dyeing and printing cellulose fibre materials with reactive dyestuffs having a halogen leaving group or sulphonyl leaving group on a heterocyclic radical, characterised in that the process is carried out in the presence of a cyanamide of an unsaturated amide in a weakly acid to neutral medium.

4,278,437

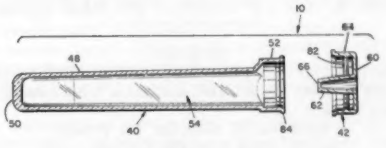
FLUID SPECIMEN HOLDER FOR BIOLOGICAL FLUID TESTING

Jan Haggar, 7056 Little Harbor, Huntington Beach, Calif. 92648

Filed Apr. 9, 1979, Ser. No. 28,545

Int. Cl.³ G01N *33/48, 31/00, 33/16;* **B01L** *3/00*

U.S. Cl. 23—230 B **3 Claims**



1. A fluid specimen holder for a biological fluid test apparatus, which comprises:

(a) an elongate, transparent specimen tube, having a closed end and an open end, said tube being formed having a generally polyhedral cross section with at least first, sec-

ond and third sides, the intersecting region of the first and second sides defining a fluid specimen flow channel for limiting side flow of a fluid specimen contained in the tube when the tube is rocked to alternately raise and lower opposite ends thereof during specimen testing, said third side being formed having a flat width several times greater than that of said channel; and

(b) a removable end cap for closing the open end of the tube, said end cap being formed having a generally tubular central portion including a transverse diaphragm having a thickness easily pierced by a hypodermic needle to enable introduction of a fluid sample into the closed tube, said central portion being formed having a cross-sectional diameter no more than about one third the corresponding cross-sectional diameter of the tube and having a length which is at least about twice the length of the edge portion of the cap, thereby providing containment of the fluid specimen in the tube when the tube is rocked and the specimen introduced into the tube comes into contact with the cap.

4,278,438

METHOD AND APPARATUS FOR ANALYSIS OF SACCHARIDES

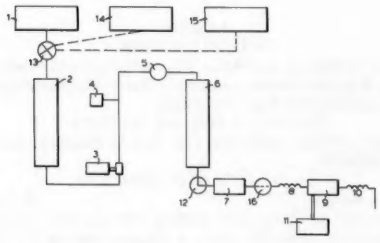
Willem Walraven, P. Lammekensstraat 6, Breda, Netherlands

Filed Apr. 17, 1979, Ser. No. 30,734

Claims priority, application Netherlands, Apr. 20, 1978, 7804208

Int. Cl.³ G01N *21/00, 31/04, 33/00*

U.S. Cl. 23—230 M **11 Claims**



1. A process for separating and analyzing saccharides said process comprising,

forming a second mixture comprising a mixture of saccharides possibly including oligosaccharides and at least one buffer and a reagent,

flowing said second mixture through a separating column, and maintaining the temperature of said second mixture below 80° C. whereby premature reactions between said saccharides and said reagents are inhibited,

hydrolyzing any oligosaccharides present in said second mixture to form monosaccharides,

reacting with said reagent any monosaccharides originally present in said first mixture and also monosaccharides formed from said hydrolyzing step, and

detecting the reaction products of said step of reacting.

4,278,439

SENSITIZERS FOR PEROXIDATIVE ACTIVITY TESTS

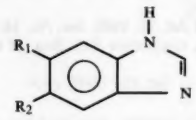
William I. White, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 17, 1979, Ser. No. 104,086

Int. Cl.³ C09K *3/00;* **G01N** *33/48, 31/22*

U.S. Cl. 23—230 B **7 Claims**

1. A test composition for detection of peroxidatively active substances in body fluids, body excreta, and the like, including an indicator capable of being oxidized in the presence of a peroxidatively active substance to provide a color change, an oxidizing agent effective to oxidize said indicator, and an effective amount of a sensitizing agent selected from the class of compounds having the formula:



wherein R_1 and R_2 are independently selected from hydrogen and C_1-C_4 alkyl.

4,278,440

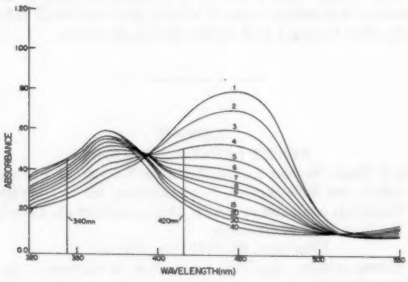
REAGENT AND METHOD FOR DIRECT DETERMINATION OF CHLORIDE IN SERUM

Wai-Tak Law, Rye, N.Y., and Gerhard Ertingshausen, Greenwich, Conn., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,215

Int. Cl.³ G01N *33/52*

U.S. Cl. 23—230 B **8 Claims**



1. A process for the direct quantitative determination of chloride in blood serum which comprises the steps of:

(a) contacting a sample of said serum with a reagent to form a solution, said reagent containing:

(i) from about 0.01 N to about 2.0 N perchloric acid in deionized water,

(ii) from about 0.01 N to about 1.0 N ferric perchlorate in deionized water, and

(iii) from about 0.1 to about 20 percent by weight of an aqueous solution of a non-ionic surfactant, capable of minimizing protein precipitation while not interfering with absorbance measurement of the chloride complex;

(b) measuring the absorbance of said solution after an incubation period,

(c) comparing the absorbance of said solution with absorbance obtained on solutions containing known amounts of chloride, and

(d) determining the amount of chloride in said serum.

4,278,441

FLAME SAMPLING APPARATUS AND METHOD

Hartwell F. Calcote, Princeton, and Douglas B. Olson, Lawrenceville, both of N.J., assignors to Aerochem Research Laboratories, Inc., Princeton, N.J.

Filed Feb. 14, 1980, Ser. No. 121,295

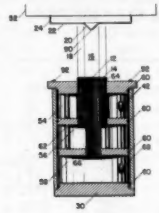
Int. Cl.³ G01N *21/72*

U.S. Cl. 23—232 E **10 Claims**

8. A method for sampling ions in a flame comprising the steps of:

producing a first flame containing the ion samples to be analyzed, said first flame having a velocity V_1;

producing a second flame located adjacent to said first flame and having a velocity V_2 close in magnitude to V_1, said first and second flames defining a relatively stable boundary therebetween; and,



sampling said ions of said sample with an analyzing means having a charged orifice located in said second flame and positioned at a distance close enough to said boundary to attract ion samples of a polarity opposite to the charge on said orifice thereby drawing the sample ions into said orifice for analysis by said analyzing means.

4,278,442

METHOD FOR REDUCING CAKING PROPERTY OF COAL

Minoru Matsuda, 1-11-806, Kawauchi-Jutaku, Kawauchi Mubanchi, Sendai, Miyagi; Hirotsugu Iwasaki, 11-5, Kinoshita, 2 Chome, Sendai, Miyagi; Yasukatsu Tamai, 1-11-401, Kawauchi-Jutaku, Kawauchi Mubanchi, Sendai Miyagi; Masashi Iino, 2-5, Kunimi 2 Chome, Sendai Miyagi, and Hiroshi Fukutome, 413, Kitamemachi Bldg., 2, Kitamemechi 4 Chome, Sendai, Miyagi, all of Japan

Filed Nov. 29, 1979, Ser. No. 98,448

Claims priority, application Japan, Nov. 30, 1978, 53-148132

Int. Cl.³ C10L *5/00*

U.S. Cl. 44—1 R **7 Claims**

3. A method for treating coal to reduce the caking property and to increase the friability thereof, which comprises the steps of: in a closed vessel, mixing and intimately contacting coal particles with liquid or gaseous sulfur dioxide, at a temperature of from 120° to 200° C., at an autogenous pressure corresponding to the absolute saturated vapor pressure of sulfur dioxide at said temperature, wherein the weight ratio of SO_2/coal is from 0.5/1 to 10/1, until the CSN index value of the coal particles is reduced to about 1.5 or lower; and then separating the coal particles from the sulfur dioxide.

4,278,443

ENERGY GENERATING PROCESS AND NOVEL FUEL THEREFOR

Harold Beuther, Cheswick, and Johann G. Schulz, Pittsburgh, Both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 7, 1979, Ser. No. 46,442

Int. Cl.³ C10L *1/02*

U.S. Cl. 44—56 **12 Claims**

1. A novel fuel composition comprising (1) a mixture of polycyclic, polycarboxylic acids obtained by oxidizing an aqueous coal slurry containing from about 40 to about 95 weight percent water with aqueous nitric acid having a concentration of about five to about 90 percent at a temperature of about 5° to about 200° C. and a pressure of about atmospheric to about 1000 pounds per square inch gauge over a period of about 0.5 to about 15 hours, separating from the resulting product an aqueous phase and a solid phase and then extracting the solid phase with a solvent to recover said mixture and (2) an organic component selected from the group consisting of methanol, ethanol, normal propanol, isopropanol and a liquid hydrocarbon fuel, said novel fuel composition containing from about five to about 75 weight percent of said polycyclic, polycarboxylic acids.

4,278,444

LIQUID HYDROCARBONS CONTAINING A FLUORESCENT COMPOUND

Robert E. Beyer, Pennington, and John P. Magoulas, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 22, 1980, Ser. No. 142,799

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—59 **5 Claims**

1. A method for detecting the presence of regular unleaded or super unleaded gasoline and a mixture of these gasolines, or in mixtures of one or more of these with leaded gasolines or other fuels, the method comprising the steps of adding to one of the unleaded gasolines, prior to mixing, a minor amount, up to about 0.3 ppm, of an alkylated isodibenzanthrone and then determining the presence of said alkylated isodibenzanthrone by spectrographic means, after the unleaded gasoline is mixed with other gasolines.

4,278,445

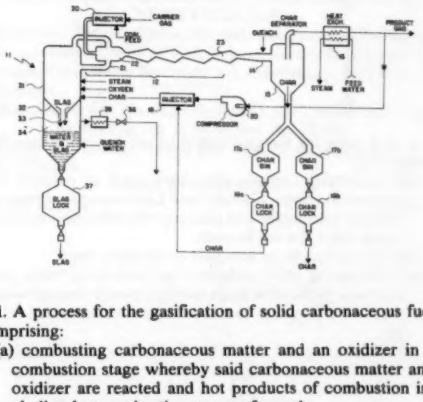
SUBSONIC-VELOCITY ENTRAINED-BED GASIFICATION OF COAL

David B. Stickler, Carlisle; Charles W. Von Rosenberg, Jr., Belmont, and Richard E. Gannon, Andover, all of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed May 31, 1979, Ser. No. 44,020

Int. Cl.³ C10J *3/46*

U.S. Cl. 48—197 R **12 Claims**



1. A process for the gasification of solid carbonaceous fuel comprising:

(a) combusting carbonaceous matter and an oxidizer in a combustion stage whereby said carbonaceous matter and oxidizer are reacted and hot products of combustion including hot combustion gas are formed;

(b) introducing steam into said combustion stage to provide an ingredient of said combustion gas;

(c) introducing said combustion gas into a mixing stage through which said combustion gas flows at subsonic velocity and at a predetermined level of turbulence;

(d) introducing and dispersing finely divided solid carbonaceous fuel in said combustion gas in said mixing stage to form a mixed flow of particles of dispersed solid carbonaceous fuel entrained in surrounding hot combustion gas;

(e) introducing said mixed flow into a gasification stage having a duct and through which said mixed flow flows at subsonic velocity with a mean gas flow rate of 10–500 m/sec.;

(f) providing one or a plurality of fluid-dynamic bulk gas accelerations and decelerations to said mixed flow whereby said particles are strongly moved with respect to said surrounding hot gas by forcing a velocity differential between said particles and said gas using the inertia of said

particles and accelerations of said gas, said mixed flow having accelerations and decelerations and said hot gas having an initial temperature sufficient that said particles are subjected to an average heating rate of at least about 10^5 degrees Kelvin per second, said particles are at least partially gasified and reduced to char and a product gas is formed;

(g) withdrawing from said gasification stage a product stream comprising said char and product gas;

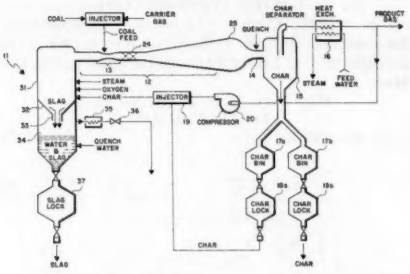
(h) separating said char from said product stream; and

(i) returning at least part of said separated char to said combustion stage to provide carbonaceous matter for combustion.

4,278,446
VERY-HIGH-VELOCITY ENTRAINED-BED GASIFICATION OF COAL

Charles W. Von Rosenberg, Jr., Belmont; David B. Stickler, Carlisle, and Richard E. Gannon, Andover, all of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed May 31, 1979, Ser. No. 44,354
Int. Cl.³ C10J 3/46
U.S. Cl. 48—197 R **13 Claims**



1. A process for the gasification of solid carbonaceous fuel comprising:

(a) combusting carbonaceous matter and an oxidizer in a combustion stage whereby said carbonaceous matter and oxidizer are reacted and products of combustion including combustion gas are formed;

(b) introducing steam into said combustion stage;

(c) introducing said combustion gas and steam under pressure to a gasification stage having a nozzle through which said combustion gas and steam flow at at least sonic velocity;

(d) introducing and dispersing finely-divided solid carbonaceous fuel comprising particles in said combustion gas at said nozzle;

(e) selectably controlling characteristics of said flow of said combustion gas and steam containing said dispersed solid fuel to provide relative movement of said particles of said fuel with respect to said combustion gas and stream by using the inertia of said particles and a plurality of accelerations and decelerations of said combustion gas and steam, provided by at least one shock wave and expansion in said flow, said combustion gas and steam having an initial temperature and said selected flow characteristics providing sufficient relative movement to provide an average heating rate of said fuel of at least about 10^5 degrees Kelvin per second whereby said fuel is partially gasified and reduced to char and a product gas is formed;

(f) withdrawing from said gasification stage a product stream comprising said char and product gas;

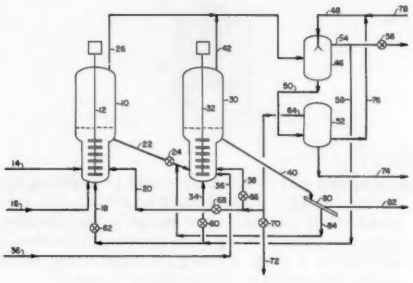
(g) separating said char from said product stream; and

(h) returning at least part of said separated char to said combustion stage to provide carbonaceous matter for combustion.

4,278,447
METHODS FOR PRODUCING FEEDSTOCK FOR A FIXED BED GASIFIER FROM FINELY-DIVIDED COAL

Philip J. Dudt, Scenery Hill, Pa., assignor to Conoco, Inc., Stamford, Conn.

Filed Nov. 16, 1979, Ser. No. 95,022
Int. Cl.³ C10J 3/00
U.S. Cl. 48—210 **13 Claims**



1. A process for gasifying a feedstock, produced from finely divided coal, in a fixed bed gasifier comprising:

(a) charging said finely divided coal to a first stirred semi-fluidized carbonizer reaction zone;

(b) charging a free oxygen containing gas to said first reaction zone in an amount sufficient to maintain a temperature from about 950° to about 1200° F. in said first reaction zone;

(c) passing an inert sweep gas upwardly through said first reaction zone at a rate sufficient to provide a linear gas velocity in said first reaction zone from about 0.1 to about 0.5 feet per second;

(d) recovering a gaseous stream from said first reaction zone;

(e) recovering a first particulate coal derived solids stream from said first reaction zone said first particulate coal derived solids stream having a larger average particle size than said finely divided coal;

(f) charging said first particulate coal derived solids stream to a second semi-fluidized stirred carbonizer reaction zone;

(g) charging said finely divided coal to said second reaction zone;

(h) passing an inert sweep gas upwardly through said second reaction zone at a rate sufficient to provide a linear gas velocity in said second reaction zone from about 0.1 to about 0.5 feet per second;

(i) recovering a gaseous stream from said second reaction zone;

(j) recovering a second particulate coal derived solids stream, from said second reaction zone, said second particulate coal derived solids stream having an average particle size greater than ¼ inch and larger than said first particulate coal derived solids stream; and

(k) charging the portion of said second particulate coal derived solids stream of a size consist larger than about ¼ inch to the fixed bed gasifier.

4,278,448
DIAMOND ABRASIVE GRITS

Hiroshi Ishizuka, 19-2 Ebara 6-chome, Shinagawa-ku, Tokyo, and Kazuo Suzuki, 931 Kagawa, Chigasaki, Kanagawa, both of Japan

Continuation of Ser. No. 805,157, Jun. 9, 1977, abandoned. This application May 31, 1979, Ser. No. 44,067
Int. Cl.³ C09K 3/14
U.S. Cl. 51—295 **13 Claims**

1. An abrasive tool for grinding a combined workpiece of a

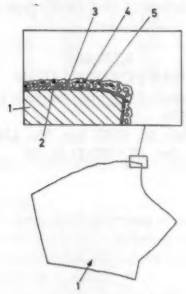
steel with an ultrahard alloy, comprising a grinding wheel comprising a resinoid binding material and synthetic diamond abrasive grits held therein, said abrasive grits being selected from one of the combinations of the grit size, bulk density and grit strength as listed in the following:

Combination	Grit Size mesh/in	Bulk Density g/cc	Grit Strength % by wt./sec
1	60 to 80	1.80 to 1.88	38 to 50/45
2	80 to 100	1.80 to 1.88	38 to 50/60
3	100 to 120	1.80 to 1.88	38 to 50/75
4	120 to 140	1.78 to 1.88	38 to 50/90
5	140 to 170	1.78 to 1.88	38 to 50/120
6	170 to 200	1.78 to 1.85	38 to 50/150
7	200 to 230	1.78 to 1.85	38 to 50/180
8	230 to 270	1.75 to 1.83	38 to 50/210
9	270 to 325	1.75 to 1.83	38 to 50/230
10	325 to 400	1.72 to 1.80	38 to 50/270

4,278,449
METHOD FOR IMPROVING THE QUALITY OF ABRASIVE GRAINS

Harald Helletsberger, Wattens; Anton Aichhorn, Thaur, and Erich Bogusch, Schwaz, all of Austria, assignors to Tyrolit-Schleifmittelwerke Swarovski K.G., Austria

Filed Dec. 6, 1979, Ser. No. 101,004
Claims priority, application Austria, Feb. 7, 1979, 901/79
Int. Cl.³ B24D *3/02, 3/14*
U.S. Cl. 51—309 **16 Claims**



1. A method of improving abrasive grains of a grinding disc, the abrasive grains made predominantly of Al_2O_3 with impurities including titanium oxide, comprising: coating the abrasive grains with a ceramic material mixed with metallic oxides capable of giving up nascent oxygen when heated, coating the abrasive grain by fusing the coating onto the abrasive grain at a temperature of between 1,250° and 1,350° C. over a period of between 15 minutes to 2 hours, the ceramic coating being at least partially melted onto the abrasive grain simultaneously with a change of the titanium oxide from the trivalent into the quadrivalent degree of oxidation.

4,278,450
METHOD FOR THE RECOVERY OF CLEAN PYROLYSIS OFF-GAS AND A ROTARY RECYCLING MEANS THEREFOR

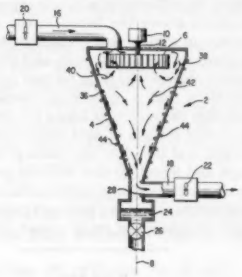
David R. Hurst, Norcross, and Lewis W. Elston, Atlanta, both of Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Oct. 9, 1979, Ser. No. 82,857
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—80 **17 Claims**

1. A method for cleaning off-gas having particulate solids and organic vapors entrained therein, said method comprising the steps of:

introducing said off-gas into the upstream end of a substantially closed chamber;

utilizing a rotor rotating about an aixs which is parallel to the overall direction of off-gas flow, to radially deflect said

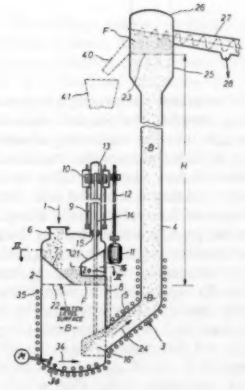


off-gas so that said off-gas impinges upon a wall of said chamber and to draw off-gas only from adjacent the downstream side of said rotor and force said off-gas in a substantially radial direction so as to impinge upon the walls of said chamber whereby a portion of said vapors are condensed and recovering purified gas.

4,278,451
APPARATUS FOR EXTRACTING GRANULAR OR FINELY DIVIDED SOLID MATERIALS FROM A GAS UNDER PRESSURE

Rolf van der Piepen, Bochum-Stiepel, and Frohmut Vollhardt, Siegen-Bürbach, both of Fed. Rep. of Germany, assignors to Gutehoffnungshütte Stockrade AG, Oberhausen, Fed. Rep. of Germany

Continuation of Ser. No. 762,575, Jan. 26, 1977, abandoned. This application Jul. 5, 1979, Ser. No. 54,804
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 2603274
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—227 **5 Claims**



1. An apparatus for collecting solid, particulate material in a gas under pressure, comprising means forming a gas-tight, primary chamber having an inlet at the top of said primary chamber connected to a source of gas and particulate matter under pressure, for deposit of said particulate matter into said

chamber, and a secondary chamber interconnected by a passage between the lower ends of said chambers, the secondary chamber extending upwardly to a substantially greater height than said primary chamber, and said passage being inclined upwardly toward said secondary chamber, molten liquid metal of higher specific gravity than said particulate matter being disposed in said chambers and passage and extending upwardly in said secondary chamber to a higher level than in said primary chamber, the difference in height representing the difference in pressures above the liquid in the two chambers, an inclined surface in said primary chamber below said inlet to guide particulate matter fed through said inlet toward one side of said primary chamber to float on said molten liquid in said primary chamber, and a conveying means in said primary chamber movable through said liquid for forcing said particulate matter on the surface of said molten liquid metal downwardly through said liquid to said passage for floating movement through said liquid up said inclined passage to said secondary chamber and upwardly to the surface in said secondary chamber, and means to remove said particulate matter from the surface of said molten liquid metal in said secondary chamber.

4,278,452

CYCLONE SEPARATOR

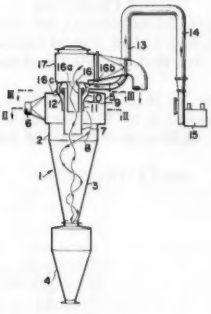
Kazuo Ido, Hino; Yukio Sogo, Atsugi; Kozo Taneda, Kodaira; Katzuji Sakai, Chiba, and Yoichiro Sato, Matsudo, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Filed Aug. 23, 1979, Ser. No. 68,953

Claims priority, application Japan, Aug. 28, 1978, 53-117527[U]; Sep. 29, 1978, 53-134551[U]

Int. Cl.³ B01D *45/12*

U.S. Cl. 55—261 **6 Claims**



1. A cyclone separator comprising a separating tower defining a separating chamber therein, inlet means for introducing particle laden gas into the separating chamber at an upper portion thereof in such a manner that the introduced gas forms a spiral downward flow along an inner wall surface of the separating tower and then it is turned in its direction of flow to form a spiral upward flow substantially along a center portion thereof, and outlet pipe means disposed in the upper portion of the separating chamber for allowing the spiral upward flow of gas to pass therethrough, comprising at least two co-axial outlet pipes radially separated from each other and disposed to form an annular passage therebetween, the innermost outlet pipe of the at least two outlet pipes extending upwardly and then outwardly and downwardly to surround the upper portion of the outermost outlet pipe of the outlet pipes and the portion of said innermost outlet pipe which surrounds said outermost outlet pipe having suction port means which communicates with the annular passage between each pair of adjacent outlet pipes and which is in flow communication with the inflowing particulate laden gas so that the outermost portion of the spiral upward flow which has entered into the outlet pipe means is drawn into said annular passage and returned back through said port means to said separating chamber while disturbing the outer surfaces of said outlet pipe means.

5. A cyclone separator comprising a separating tower defining a separating chamber therein, inlet means for introducing particle laden gas into the separating chamber at an upper portion thereof in such a manner that the introduced gas forms a spiral downward flow along an inner wall surface of the separating tower and then it is turned in its direction of flow to form a spiral upward flow substantially along a center portion thereof, and outlet pipe means disposed in the upper portion of the separating chamber for allowing the spiral upward flow of gas to pass therethrough, comprising at least two co-axial outlet pipes radially separated from each other and disposed to form an annular passage therebetween, the innermost outlet pipe of the at least two outlet pipes extending upwardly and then outwardly and downwardly to surround the upper portion of the outermost at least two outlet pipe of the outlet pipes and to form between its lower end and said outermost outlet pipe a port which communicates with the annular passage between each pair of adjacent outlet pipes and which is adapted to be subjected to a suction force when a stream of fluid flows before said port, accelerating gas discharging means located on the upper outer surface of said outermost outlet pipe, and connected to a pressurized gas supplying means to discharge accelerating gas along the outer surface of said outermost outlet pipe, said outer lower end of said innermost outlet pipe extending into said accelerating gas discharging means so that when the accelerating air is injected through said accelerating air discharging means a suction force is created at said port by aspiration effect and the outermost portion of the spiral upward flow which has entered into the outlet pipe means is drawn into said annular passage and returned back through said port to said separating chamber while disturbing the outer surface of said outlet pipe means.

4,278,453

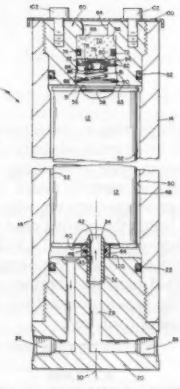
GAS PURIFICATION

Jordan N. Klein, Summerfield, Fla., assignor to Mako Compressors Inc., Ocala, Fla.

Filed Feb. 25, 1980, Ser. No. 124,307

Int. Cl.³ B01D *46/00*

U.S. Cl. 55—275 **10 Claims**



1. In gas purification apparatus having a purification cartridge mounted in a housing having an inlet and an outlet, said cartridge containing chemicals for removing contaminants and moisture from gas, the interior of said cartridge communicating with said housing inlet, said cartridge having at least one end wall with a restricted opening therethrough to permit gas flow from the interior to the exterior of said cartridge, that improvement comprising

a removable indicator plug mounted in said housing adjacent

to said cartridge and having at least a portion spaced from and facing said restricted opening in said end wall thereby defining a gas flow zone communicating with said opening, said flow zone also communicating with said housing outlet,

said indicator plug having a replaceable visual indicator for at least one expected pollutant of said gas mounted in said plug, wherein turbulent gas flow from said restricted opening in said cartridge reaches said indicator in said plug and

a window mounted in said plug to permit observation of said indicator from outside said housing,

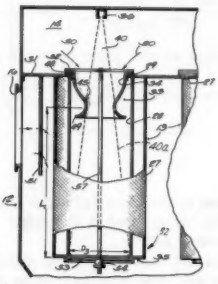
said plug having gas flow space communicating between said indicator and said zone.

4,278,454

FILTER APPARATUS WITH REVERSE FLOW CLEANING

Stephen A. Nemesi, Louisville, Ky., assignor to Wehr Corporation, Milwaukee, Wis.

Filed May 29, 1979, Ser. No. 42,963
Int. Cl.³ B01D 46/04
U.S. Cl. 55—302 **9 Claims**



1. Filter apparatus comprising, in combination,

a hopper,

an exhaust chamber,

at least one filter assembly disposed in said hopper and having a gaseous medium flow opening communicating with said exhaust chamber, said filter assembly including a filter medium having inner walls,

said hopper being generally sealed from said exhaust chamber except through the filter medium of said filter assembly,

means defining an inlet into said hopper for introducing contaminated gaseous medium into said hopper so that said contaminated gaseous medium is caused to flow to said exhaust chamber through said filter medium and contaminants are accumulated on said filter medium,

a generally hollow inductor unit positioned at the opening of said assembly to said exhaust chamber and through the interior of which gaseous medium passes in flowing between said hopper and said exhaust chamber,

means for selectively directing a reverse stream of air into said inductor unit from the exhaust chamber side thereof so that said reverse stream of air enters said filter assembly and flows through said filter medium in the reverse of the direction of contaminated gaseous medium flow to remove accumulated contaminants from said filter medium,

said inductor unit including,

a bell-mouth section at the opening of said filter assembly to said exhaust chamber,

a throat spaced from said bell-mouth section away from said exhaust chamber and having a diameter less than that of said bell-mouth section,

and means defining a wall extending from said bell-mouth section to a generally arcuate shoulder adjacent said throat and having a major diameter which is generally greater than the diameter of said throat so that said reverse stream entering said inductor unit does not impinge directly on said wall until it reaches said shoulder and said stream aspirates gaseous medium into said inductor unit which combines with said reverse stream and flows into said filter assembly and through said filter medium, said throat having a minimum diameter area, said filter medium having a minimum inner diameter,

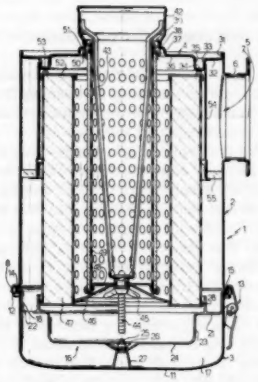
and the distance from said minimum diameter throat area to said minimum filter medium diameter area and the relationship of said minimum throat area diameter to said minimum filter medium diameter are such that the airstream being discharged from said throat area does not impinge directly on the inner walls of said filter medium.

4,278,455

AIR FILTER AND AIR FILTER CONTAINER

Giovanni Nardi, Pisa, Italy, assignor to Gilardini S.p.A., Turin, Italy

Filed Nov. 27, 1979, Ser. No. 97,679
Claims priority, application Italy, Nov. 30, 1978, 53934/78[U]
Int. Cl.³ B01D 50/00; B65D 51/16
U.S. Cl. 55—337 **12 Claims**



1. A container for air filters adapted to selectively house one of at least two different primary filter elements having different diameters and lengths, said container having a cylindrical body closed at one end by a fixed cap and at its opposite end by a removable cap, an air inlet in said container body and a centrally disposed air outlet in said fixed cap, said fixed cap having a plurality of concentric annular sealing surfaces surrounding said air outlet, each such sealing surface forming a seat for a different size primary filter element, an adjustable means for securing a selected one of the said primary elements in said container with its end in sealing contact with the corresponding sealing surface, each of said sealing surfaces being surrounded by an annular wall to center the selected filter element on its corresponding sealing surface, and including centering means within the container at the end opposite said fixed cap to center the selected filter element with respect to its corresponding sealing surface, said centering means comprising a plurality of annular walls corresponding in diameter to the diameters of said different primary filter elements, each of said annular walls of said centering means being in axial alignment with a corresponding annular wall surrounding said sealing surfaces, whereby to center the selected filter element both at the top and at the bottom of said container.

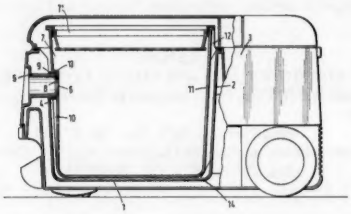
10. The container claimed in claim **1** in combination with a primary filter element of a size to seat on one of said annular sealing surfaces, said primary filter element having an annular

gasket in contact with said one of said sealing surfaces, whereby said primary filter is hermetically sealed to said one sealing surface.

4,278,456
VACUUM CLEANER

Niklaus Hug, Romanshorn, Switzerland, assignor to Rommag P. Wörwag & Co., Romanshorn, Switzerland

Filed Dec. 26, 1979, Ser. No. 106,483
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856102
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—429 **7 Claims**



1. A vacuum cleaner for professional, commercial, and household use, comprising:

a housing having a longitudinal axis and interior provided with inlet means including an opening that projects into and communicates with the interior of said housing for admitting dust-laden air thereto;

a removable dust collecting container including a filter and having an upper edge region and a bottom surface as well as an outer surface facing the inlet means, said container being inserted and received in said housing interior and being provided with an inlet flow opening communicating with said inlet means for receiving dust-laden air;

a seal arranged between said inlet flow opening of said container and said opening of said inlet means for establishing an airtight and dust-tight connection therebeteen;

rib means on said housing for facilitating insertion of said dust collecting container in said housing interior, and for producing, along with said seal, a sealing fixation located between said inlet flow opening of said container and said opening of said inlet means;

said dust collecting container on that outer surface thereof which faces said inlet means, being provided with a guide groove which is arranged to engage said opening of said inlet means with nominal play; and

at least one inlet rib provided with said dust collecting container on the outer surface thereof located across from said inlet flow opening, said rib engaging against said housing of the vacuum cleaner and having an inclined mounting surface and an engagement surface adjoining the mounting surface with which the inserted dust collecting container engages against said housing of the vacuum cleaner.

4,278,457
HYDROCARBON GAS PROCESSING

Roy E. Campbell, and John D. Wilkinson, both of Midland, Tex., assignors to Ortloff Corporation, Midland, Tex.

Filed Jul. 14, 1977, Ser. No. 815,542
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—24 **7 Claims**

1. In a process for the separation of a feed gas containing methane and ethane into a volatile residue gas containing a major portion of said methane and a relatively less volatile fraction containing a major portion of said ethane, said feed gas containing hydrocarbons and at least 0.02 mole percent carbon dioxide, wherein methane and ethane together comprise a major portion of said feed gas, in said process

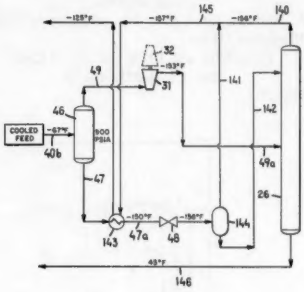
(a) said feed gas being cooled under pressure to provide a cooled feed stream;

(b) said cooled feed stream being expanded to a lower pressure whereby it is further cooled; and

(c) said further cooled feed stream is fractionated at said lower pressure in a fractionation column, the overhead temperature of said fractionation column being maintained at a temperature whereby the major portion of said ethane is recovered in said relatively less volatile fraction;

the improvement wherein prior to cooling said feed gas is divided into a first gaseous stream and a second gaseous stream prior to said step (a) and

(1) said first stream is cooled to condense substantially all of it, and is thereafter expanded to said lower pressure;



(2) said second stream is cooled under pressure to provide a cooled feed stream and is thereafter expanded to said lower pressure; and

(3) said expanded first and second streams are thereafter supplied to said fractionation column at first and second feed points, respectively, said first feed point being the top liquid feed to said column, and said second feed point being at a mid-column feed position,

the proportion of said feed gas comprising said second stream, and the temperature of said second gas stream prior to expansion being controlled sufficiently that the temperature and amount of the expanded vapor will be effective to reduce the risk of carbon dioxide icing in said fractionation column.

4,278,458
OPTICAL FIBER FABRICATION METHOD AND APPARATUS

Paul B. O'Connor, Plainfield, and Arthur D. Pearson, Bernardsville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 7, 1979, Ser. No. 9,935
Int. Cl.³ C03B *37/07*
U.S. Cl. 65—2 **20 Claims**

12. A method of fabricating optical fibers comprising, producing a glass precursor vapor;

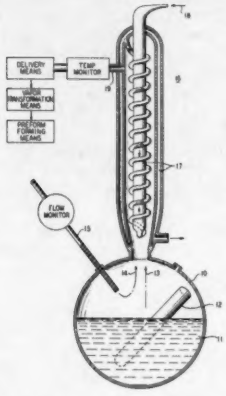
combining the vapor with a stream of carrier gas at a temperature greater than T_c;

monitoring the quantity of carrier gas combined with the vapor;

passing the combination of vapor and carrier gas through a substantially constant temperature region at a temperature T_c, where condensation occurs, to obtain a stream of carrier gas saturated at temperature T_c with the vapor;

adjusting the temperature T_c, the amount of vapor initially produced, the amount of carrier gas introduced, or combinations thereof, so as to maintain condensation in the T_c temperature region;

monitoring the temperature of the saturated gas stream;
delivering the resulting vapor to a vapor transformation means without substantial condensation of the glass precursor vapor;



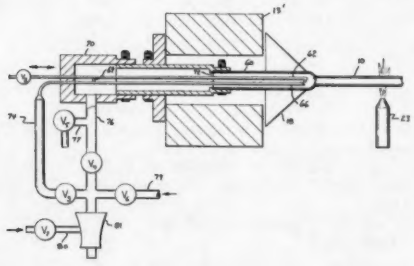
transforming the delivered vapor into an appropriate glass; and
forming the glass into an optical fiber preform.

4,278,459

METHOD AND APPARATUS FOR EXHAUSTING OPTICAL FIBER PREFORM TUBES

Fred P. Partus, Atlanta, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,605
Int. Cl.³ C03C 25/02; C03B 37/00
U.S. Cl. 65—18 **16 Claims**



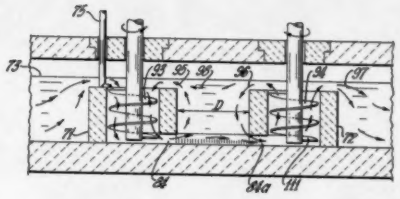
1. A method of exhausting reaction products from an optical fiber preform tube into which through an upstream tube end vapors are introduced entrained with a carrier gas for chemical reaction and deposition, and with the method comprising the steps of providing an exhaust tube with an entry end located adjacent and in fluid communication with a downstream end of the preform tube; applying suction to the exhaust tube; and introducing a stream of reaction product agitating gas substantially free of vapor deposition reaction products into the exhaust tube at a location adjacent the exhaust tube entry end.

4,278,460

METHOD AND APPARATUS FOR MIXING AND HOMOGENIZING MOLTEN GLASS

Max G. Chrisman, Granville; Gary W. Ganzala, Columbus, and Ralph L. Tiede, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 735,487, Oct. 26, 1976, abandoned. This application Apr. 18, 1979, Ser. No. 31,263
Int. Cl.³ C03B 5/187
U.S. Cl. 65—134 **22 Claims**



1. Apparatus for homogenizing molten glass flowing through a forehearth channel comprising, a flow restricting block projecting upward from the channel floor and extending across the width of said channel adapted for causing molten glass flowing through said channel to flow over the upstream top surface of said block, an internal passageway formed in said block descending from the block's top surface and communicating with the downstream forehearth channel, stirrer means positioned within said internal passageway for simultaneously stirring and pumping molten glass downward through said passageway at a flow rate greater than the average forehearth flow rate and thereby causing a back flow of molten glass from the downstream forehearth channel over the top downstream surface of said block to be recycled through said passageway.

9. Method for operating a glass melting furnace having a melting zone and at least one processing zone disposed adjacent to said melting zone and which is connected by a passage thereto, the method which comprises causing molten glass to flow from said melting zone to said processing zone, withdrawing a portion of the molten glass from the top of said processing zone laterally in a surface flow, recirculating the withdrawn portion of molten glass to said processing zone or to a separate refining zone by flowing the recirculated portion of molten glass into the passage connecting the melting zone and the processing zone and applying a submerged, downwardly directed impulse to the recirculated glass.

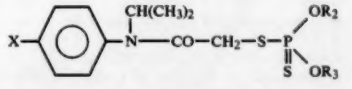
4,278,461

HERBICIDAL AGENTS

Gerhard Salbeck, Hofheim; Hubert Schönowsky, Urberach; Gerhard Hörlein, Frankfurt am Main; Peter Langelüddeke, Diedenbergen, and Helmut Köcher, Hofheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 764,963, Feb. 2, 1977, abandoned. This application Sep. 13, 1978, Ser. No. 942,069
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1976, 2604224
Int. Cl.³ A01N 57/14; C07F 9/40
U.S. Cl. 71—87 **11 Claims**

1. A compound of the formula



wherein
X is halogen and

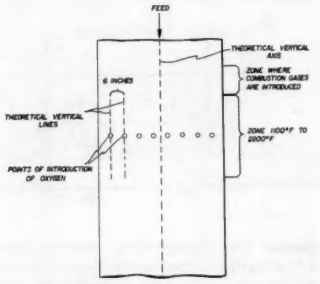
R_2 and R_3 are selected from methyl and ethyl.

4,278,462

PROCESS FOR UPGRADING IRON ORE PELLETS

Kazuo Kiyonaga, Tarrytown, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 6, 1976, Ser. No. 712,259
Int. Cl.³ C22B *1/214*
U.S. Cl. 75—5 **7 Claims**



1. In a process for hardening oxidizable green iron ore pellets in a vertical shaft furnace adapted therefor, said process comprising passing the pellets through the furnace wherein said pellets are heated by contact with hot combustion gases and air, the furnace having a zone which is downstream of the introduction of the combustion gases, said zone having an average temperature in the range of about 1100° F. to about 2200° F.,

the improvement comprising

directing a plurality of gas streams consisting essentially of oxygen at the pellets passing through the periphery of said zone in such a manner that

(a) each stream penetrates into the furnace about one to about six inches measured from the inside surface of the furnace wall along a line perpendicular to the theoretical vertical axis of the furnace;

(b) the velocity of each stream is sufficient to substantially prevent the stream from flowing up the furnace wall;

(c) the points of introduction of the streams are on the inside surface of the furnace wall located in the zone; and

(d) any theoretical vertical line, which is parallel to the vertical axis of the furnace and along which line any point of introduction is located, is no more than about 12 inches from any other such theoretical line along which any other point of introduction is located.

4,278,463

PROCESS FOR RECOVERING COBALT

Clarence D. Vanderpool; Martin B. MacInnis, both of Towanda; Robert P. McClintic, Monroeton, and Richard G. W. Gingerich, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 28, 1980, Ser. No. 135,050
Int. Cl.³ C22B *23/04*
U.S. Cl. 75—0.5 A **4 Claims**

1. An improvement in the process for producing cobalt, the basic process comprising the steps of forming cobalt ions in solution by digesting scrap tungsten carbide in hydrochloric acid to form a solution comprising cobalt chloride and dissolved cations selected from the group consisting of iron, copper, and manganese and mixtures thereof, complexing said cobalt ions with ammonia in the presence of chloride ions to form a cobalt ammine chloride solution, forming a cobalt containing precipitate, separating said cobalt containing precipitate from the resulting solution containing dissolved cations, wherein the improvement comprises contacting the resulting solution containing dissolved cations at an acid pH with a sufficient amount of aluminum metal for a sufficient period of time to form cobalt metal as a precipitate.

4,278,464

METHOD FOR PREVENTING SLOPPING DURING SUBSURFACE PNEUMATIC REFINING OF STEEL

Roland P. Bury, Marcimelle, Belgium; Stewart K. Mehlman, Tarrytown, and Rockne J. Andreini, New York, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 27, 1979, Ser. No. 107,535
Int. Cl.³ C21C *7/00, 5/30*
U.S. Cl. 75—51 **5 Claims**

1. A method for preventing slopping during subsurface pneumatic refining of a steel melt which requires fuel additions, while simultaneously controlling the temperature of the melt, comprising:

adding an oxidizable fuel material to the melt in an amount sufficient to obtain the desired tap temperature at the end of the refining period, at a time after the melt has been decarburized to substantially the specification carbon content or after the carbon content has fallen below about 0.50%.

4,278,465

CORROSION-RESISTANT ALLOYS

John H. Culling, Kirkwood, Mo., assignor to Carondelet Foundry Company, St. Louis, Mo.

Filed Nov. 2, 1979, Ser. No. 90,572
Int. Cl.³ C22C *30/02*
U.S. Cl. 75—122 **3 Claims**

1. An air meltable, workable, weldable, castable alloy resistant to sulfuric acid solution and hardenable by heat treatment to impart hardness and resistance to abrasion and erosion, said alloy consisting essentially of between about 25.00 and about 28.00% by weight nickel, between about 35.00 and about 38.00% by weight chromium, between about 1.50 and about 3.0% by weight molybdenum, between about 2.8 and about 3.8% by weight copper, between about 3.0 and about 4.5% by weight manganese, between about 0.25 and about 0.85% by weight niobium, between about 20.0 and about 34.2% by weight iron, up to about 1% by weight titanium, up to about 1% by weight tantalum, up to about 0.010% by weight boron, up to about 0.5% by weight cobalt, up to about 1.0% by weight silicon, up to about 0.08% by weight carbon, up to about 0.6% by weight of a rare earth component selected from the group consisting of cerium, lanthanum and misch metal, and up to about 0.15% by weight nitrogen.

4,278,466

TITANIUM ALLOY COMPOSITION AND METHOD FOR THE STORAGE OF HYDROGEN

Olivier de Pous, Geneva, Switzerland, assignor to Battelle Memorial Institute, Geneva, Switzerland

Filed Nov. 9, 1979, Ser. No. 92,656
Claims priority, application Switzerland, Nov. 14, 1978, 11674/78
Int. Cl.³ C22C *30/00;* C01B *6/02;* F17C *11/00*
U.S. Cl. 75—175.5 **10 Claims**

1. A titanium-iron based alloy for the storage of hydrogen having the formula:

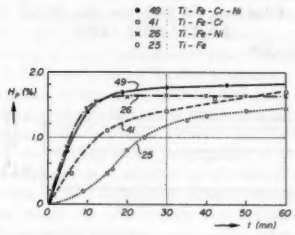
$$Ti_wFe_xM'_yM''_z$$

wherein

M′ is a metal selected from the group consisting of chromium and vanadium and having an ability to render a titanium-iron based alloy substantially nonoxidizable in the presence of oxidizing impurities in the hydrogen to be stored;

M″ is a metal selected from the group consisting of nickel

and manganese but is nickel where M' is chromium and is capable of promoting absorption of hydrogen in the alloy;



y and z are each 0.01 to 0.2; and
w is at least equal to the sum of x, y, and z.

4,278,467

SUBSTITUTIVE ADDITIVES FOR ISOPROPYL ALCOHOL IN FOUNTAIN SOLUTION FOR LITHOGRAPHIC OFFSET PRINTING

Thomas A. Fadner, Pittsburgh, Pa., assignor to Graphic Arts Technical Foundation, Pittsburgh, Pa.

Continuation of Ser. No. 941,059, Sep. 11, 1978, abandoned. This application Oct. 22, 1979, Ser. No. 87,692

Int. Cl.³ C09K *3/18, 13/06*

U.S. Cl. 106—2 **2 Claims**

1. An isopropyl alcohol-free fountain solution consisting essentially of, between about 0.5 and 5 percent by volume of one or more compounds selected from a group of non-ionic compounds having less than about 20 percent solubility in water at from about 15°–35° C., the solubility of water in said compounds being not less than about equal to said compounds solubility in water, said non-ionic compounds being miscible with printing inks and having a surface tension value less than about 40 to 50 dynes/cm and having a vapor pressure value less than about 5 mm Hg at 15° to 35° C., said non-ionic organic compounds being present within about 5 weight percent of said non-ionic organic compound water solubility limit at the dampening solution temperature, said non-ionic compounds having a molecular weight of between 100 and 300 gm/mole, said non-ionic organic compounds having a solubility in water to transport sufficient quantities of water to inked surfaces and efficiently renew the water at the surfaces of an inked plate, and

between one-tenth of 1 percent to about 5 percent by weight of a lithographic fountain solution etch concentrate.

4,278,468

GYPSUM FIRE BARRIER FOR CABLE FIRES

Rexford L. Selbe, Palatine; Vincent M. Waropay, Naperville; Paul S. Quigg, Barrington, and William S. Reily, Des Plaines, all of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Sep. 10, 1979, Ser. No. 74,204

Int. Cl.³ C04B *11/00;* **E04B** *1/74*

U.S. Cl. 106—111 **11 Claims**

1. A gypsum cement composition adapted for use in electrical cable fire barrier operations having pseudo-plastic flow in aqueous slurry, having a dry density of about 25 to 35 pounds per cubic foot and having a dry compressive strength when set below 300 pounds per square inch, which comprises by weight:

about 30 to approximately 80% calcium sulfate hemihydrate;

about 10 to approximately 40% diatomaceous earth aggregate having an apparent bulk density in the range from about 5 to approximately 16 pounds per cubic foot and a water carrying capacity in the range from about 1.5 to approximately 4 times its weight of water;

about 10 to approximately 30% of a second aggregate having a dry bulk density in the range from about 5 to approximately 20 pounds per cubic foot, and a water carrying capacity from about 0.7 to approximately 4 times its weight of water;

and by weight based on the weight of hemihydrate about 0.05–1.25% glycerine and about 0.05–0.7% boric acid.

9. A settable pseudo-plastic mass comprising an aqueous slurry of the composition of claim 1.

4,278,469

PROCESS FOR REPAIRING ASPHALT PAVEMENT

Tsoung Y. Yan, Philadelphia, Pa., and Costandi A. Audeh, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,480

Int. Cl.³ C08L *95/00*

U.S. Cl. 106—278 **4 Claims**

1. A ductile asphaltic composition adapted for repairing and surfacing distressed asphalt pavements which comprises a blend of (1) between about 30–80 weight percent of an asphalt component selected from marginal asphalt materials having a viscosity-penetration index lower than about 2.5×10^5; (2) between about 10–60 weight percent of a highly aromatic petroleum refinery residuum solvent component having a boiling range above about 650° F. and having a hydrogen content distribution in which the H_{Ar} proton content is between about 30 and 50 percent, the H_α proton content is at least 30 percent and the H_α/H_β proton ratio is above about 1.4; and (3) between about 1–20 weight percent of a polymeric component which is substantially asphalt-soluble; wherein the said asphaltic composition has a ring and ball softening point in the range between about 110°–185° F., a ductility of more than 100 centimeters at 77° F., and a penetration value in the range between about 70–300.

4,278,470

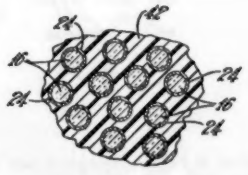
BITUMINOUS COMPOSITE REINFORCED WITH A FILLER COATED WITH THE REACTION PRODUCT OF BITUMEN AND AN ORGANOSILICON COMPOUND

Alfred Marzocchi; Michael C. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 43,065, May 29, 1979, which is a continuation-in-part of Ser. No. 970,774, Dec. 18, 1978, abandoned, which is a continuation of Ser. No. 852,778, Nov. 18, 1977, abandoned. This application Mar. 31, 1980, Ser. No. 135,802

Int. Cl.³ B32B *11/00;* **C08L** *95/00*

U.S. Cl. 106—281 R **3 Claims**



1. A reinforced composite comprising a bitumen as a continuous phase and, as reinforcement in the bitumen, a filler selected from the group consisting of natural and synthetic fillers having a coating thereon, said coating comprising the reaction product of bitumen and an organo silicon compound containing at least one organic group bonded to the silicon atom, with the organic group being substituted with a functional group reactive with the bitumen, and at least one readily hydrolyzable group.

4,278,471

PROCESS FOR EXTRACTING SUGAR FROM CELLULOSE AND CELLULOSIC MATERIALS

Barron S. Whittingham, Los Angeles, Calif., assignor to Carl Eugene Dedlow, Venice, Calif.

Filed Oct. 5, 1979, Ser. No. 82,159
Int. Cl.³ C13K 1/02
U.S. Cl. 127—37 4 Claims

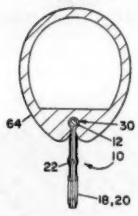
1. A process for producing glucose from pulp cellulose which comprises the following steps: dispersing paper or wood into a solution comprising water, a non-ionic surfactant and trisodium phosphate to form a pulp; washing the pulp free of chemicals until a pH of the order of 7.0 is achieved; dewatering the pulp to a selected degree of moisture; placing the pulp in a closed vessel with water to form an aqueous mixture; adding sulphur dioxide (SO_2) to the aqueous mixture within the vessel at ambient temperature; raising the pressure of the aqueous mixture in the vessel to a selected increased pressure of between two and four atmospheres; agitating the aqueous mixture in the vessel at the selected increased pressure and at ambient temperature to reduce the cellulose fibers of the pulp in the aqueous mixture; releasing the sulphur dioxide (SO_2) from the vessel; adding sulphuric acid (H_2SO_4) to the aqueous mixture in the vessel; raising the pressure within the vessl to 15 psi by heating, and subsequently increasing the pressure to 30 psi and finally increasing the pressure to 40 psi, each increment of increased pressure being maintained for a preselected time, thereby to cause the sulphuric acid (H_2SO_4) to hydrolyze the cellulose in the mixture to a hydrolysate containing dissolved cellulose fibers; and neutralizing the hydrolysate to a pH of the order of 7.0 to produce a syrup containing -D glucose.

4,278,472

METHOD AND APPARATUS FOR CLEANING SAILBOAT BOLT LINE TRACKS

Thomas A. Swanson, 20919 Bloomfield, Apt. 74, Lakewood, Calif. 90715

Filed Dec. 3, 1979, Ser. No. 99,559
Int. Cl.³ B08B 1/00, 9/00
U.S. Cl. 134—8 9 Claims



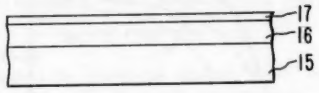
6. A method of cleaning elongated bolt line tracks on a sailboat using a short cleaning implement having a nappy fabric covered track insertion core, a rigid backing extending parallel to said insertion core, a flexible sheet folded over to define an edge return at which said insertion core is located and a skirt narrower than said insertion core enveloping said rigid backing and in which longitudinally separated grommets are defined, and means for immobilizing said insertion core and said rigid backing within said flexible sheet, comprising engaging said fabric covered insertion core in a bolt line track and repetitively moving said implement reciprocally therealong within said track to dislodge material therefrom.

4,278,473

MONOLITHIC SERIES-CONNECTED SOLAR CELL

Peter G. Borden, Menlo Park, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Aug. 24, 1979, Ser. No. 69,462
Int. Cl.³ H01L 31/04
U.S. Cl. 136—249 10 Claims



1. A monolithic series-connected solar cell having a plurality of individual cells fabricated in spaced-apart relation in semiconductor material on an insulating substrate, said individual cells being separated by breaks which extend through said semiconductor material to said insulating substrate, said individual cells being electrically interconnected in series by leads which extend from the top region of one cell to the base region of an adjacent cell, the improvement comprising:

said lead extending from the top region of one cell over an insulating layer which covers the exposed edges of said one cell to a contact ledge formed in the exposed edge of the base of an adjacent cell, said contact ledge providing a surface for positive termination of said lead.

6. A fabrication sequence for providing a monolithic series-connected solar cell from a single junction cell fully formed in semiconductor material on an insulating substrate, comprising the steps of:

providing a fully formed solar cell of semiconductor material on an insulating substrate;

forming breaks in said semiconductor material, said breaks extending to said insulating substrate to separate individual cell regions;

forming a contact ledge in the exposed edge of the base region of those individual cells which are to be electrically interconnected to the top region of adjacent cells;

forming a layer of insulating material over the exposed edges on the sidewall opposite to said contact ledges; and

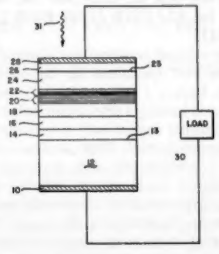
forming an electrically conductive interconnection lead over said layer of insulating material from the top region of said adjacent cell to said contact ledge.

4,278,474

DEVICE FOR CONVERSION OF ELECTROMAGNETIC RADIATION INTO ELECTRICAL CURRENT

A. Eugene Blakeslee, Golden, and Kim W. Mitchell, Indian Hill, both of Colo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 25, 1980, Ser. No. 133,702
Int. Cl.³ H01L 31/06
U.S. Cl. 136—249 20 Claims



1. A device for direct conversion of electromagnetic radia-

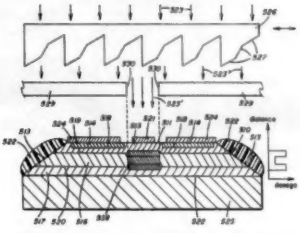
tion to electrical energy comprising, a first ohmic contact, a second ohmic contact, semiconductor means for absorbing electromagnetic radiation positioned between said contacts and including at least first and second portions each of which absorbs electromagnetic radiation in a certain energy spectrum and converts the radiation to electrical energy, with said first portion having a first characteristic electromagnetic energy gap and said second portion having a second characteristic electromagnetic energy gap, said second portion having a lattice structure mismatched to the lattice structure of said first portion, layer means positioned between said first and second portions to substantially block propagation of dislocation defects from one portion to another by substantially preventing the dispersion of said dislocation defects through said layer means, and means for effectuating low resistance electrical contact between said portions.

4,278,475

FORMING OF CONTOURED IRRADIATED REGIONS IN MATERIALS SUCH AS SEMICONDUCTOR BODIES BY NUCLEAR RADIATION

John Bartko, Monroeville, and Earl S. Schlegel, Plum Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 4, 1979, Ser. No. 936
Int. Cl.³ H01L *21/263, 7/54, 21/22*
U.S. Cl. 148—1.5 **110 Claims**



1. A method of forming an irradiated region of a desired thickness, dosage and dosage gradient in a material a desired distance from a selected surface thereof comprising the steps of:

A. providing a radiation beam from a given radiation source radiating particles with molecular weight of at least one (1) capable of penetrating a material wherein an irradiated region is to be formed through a selected surface to greater than a maximum desired depth of the irradiated region from the selected surface;

B. modifying the beam with a beam modifier of a given material and non-uniform shape to modify the energy of said radiation beam on transmission therethrough to form a transmitted radiation beam capable of forming an irradiated region of a desired thickness and dosage gradient in the material a given distance from the selected surface on irradiation of the material through the selected surface with the transmitted radiation beam;

C. positioning the material with said selected surface thereof to be exposed to the radiation beam from the radiation source on transmission through the beam modifier modifying the energy of the beam; and

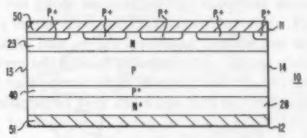
D. thereafter irradiating the material through the beam modifier and through the selected surface to form in the material an irradiation region of desired thickness, dosage and dosage gradient a desired distance from the selected surface.

4,278,476

METHOD OF MAKING ION IMPLANTED REVERSE-CONDUCTING THYRISTOR

John Bartko, Monroeville, and Earl S. Schlegel, Plum, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 5, 1979, Ser. No. 100,680
Int. Cl.³ H01L *21/265*
U.S. Cl. 148—1.5 **4 Claims**



1. In a process for preparing a pnpn thyristor in a body of silicon in which the p-type anode emitter region is electrically shorted to the n-type anode base region, the step of;

implanting boron atoms through the n-type cathode emitter whereby a p^+ type region is formed between the n-type cathode emitter region and the p-type cathode base region, said p^{30} type region being doped to concentrations of from 5×10^{17} to 5×10^{18}.

4,278,477

METAL TREATMENT

Earl R. Reinhold, Levittown, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Mar. 19, 1980, Ser. No. 131,609
Int. Cl.³ C23F *7/00*
U.S. Cl. 148—6.14 R **18 Claims**

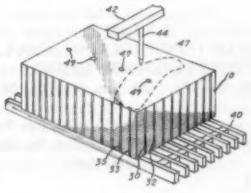
1. An aqueous alkaline coating solution which is effective in forming corrosion-resistant coatings on surfaces of zinc or alloys of zinc, said solution having a pH of no greater than about 10.2 and consisting essentially of one or more of the following metals in solution: cobalt, nickel, iron and tin, the total amount of said metal or mixture of said metals in the solution being about 0.01 to about 1 g/l; and a complexing material in an amount effective to maintain the metal in solution, said complexing material being selected from the group consisting of pyrophosphate, nitrilotriacetic acid, a salt of nitrilotriacetic acid, and a mixture of two or more of said complexing materials.

4,278,478

METHOD OF STACK CUTTING

Quinton Tidquist, 2200 Magnolia, Denver, Colo. 80207

Filed Feb. 21, 1979, Ser. No. 13,549
Int. Cl.³ B23K *7/00*
U.S. Cl. 148—9 R **6 Claims**



1. A method of forming a stack of thin metal sheets ready for torch cutting into a stack of individual and separate shapes without warping comprising:

(a) forming a stack of clean, thin rectilinear metal sheets of the same size and shape, one above the other,

(b) placing a cover plate on the top and bottom of said stack of thin metal sheets, said cover plates being substantially

thicker than said sheets and essentially resistant to warping under torch cutting, and the edges of said sheets and plates being in general alignment,

(c) pressing said stack of thin metal sheets and cover plates in very close face-to-face engagement without bonding the sheets together and excluding air from between the sheets

(d) welding said sheets and plates together by a series of narrow perpendicular weldments along the edges of the stack, each weldment extending from cover plate to cover plate and welded to all said sheets, said weldments being closely spaced and extending around the periphery of the stack to hold said plates in close face-to-face non-bonding engagement so that said stack may be torch cut inside the edges of the stack to produce a stack of non-bonded, individual shapes free from each other and

(e) torch cutting shapes from said stack interiorly of said weldments.

4,278,479

ORGANIC ACID ACTIVATED LIQUID SOLDER FLUX

Edward A. Anderson, Yorba Linda; Rose M. Rawls, and James A. Tull, both of Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 18, 1980, Ser. No. 160,716
Int. Cl.³ B23K *35/34*
U.S. Cl. 148—23 **8 Claims**

1. An improved solder flux comprising a flux base and an organic acid activator dissolved in sufficient solvent to form a liquid solder flux, characterized in that the organic acid activator consists essentially of a carboxylic acid derivative of a condensed nuclear hydrocarbon.

4,278,480

SLURRY TYPE EXPLOSIVE

Gerald E. Johannes, 565 Frank Ave., S.E., Huron, S. Dak. 57350

Filed Aug. 6, 1979, Ser. No. 63,688
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **9 Claims**

1. A slurry type explosive comprising polyisobutylene containing a dispersed mixture of one or more particulate explosive materials selected from the group consisting of ammonium nitrate, pentaerythilol tetranitrate, cyclotrimethylenetrinitramine, pentolite, aluminum powder and powdered trinitrotolyene admixed with a minor amount of a oxidizable fuel selected from the group consisting of hydrocarbon oils and carbon in particle form.

4,278,481

METHOD OF CONSTRUCTING SIMULATED VEGETATION FOR MODELS

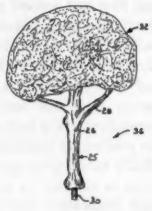
David L. Osment, 9904 W. 70th Ter., Shawnee Mission, Kans. 66203

Division of Ser. No. 871,392, Jan. 23, 1978, Pat. No. 4,202,922.
This application Oct. 15, 1979, Ser. No. 84,737
Int. Cl.³ A41G *1/00*
U.S. Cl. 156—61 **5 Claims**

1. A method of constructing simulated vegetation for models comprising:

providing a substrate of non-ferrous, light-penetrable, fibrous material, said material having loose separable fibers with the ability to be pulled and stretched over the limbs of an artificial model tree structure,

said material presenting a substantially continuous substrate with a light penetrability of at least 50%; applying an adhesive to said substrate; and at least partially covering said substrate



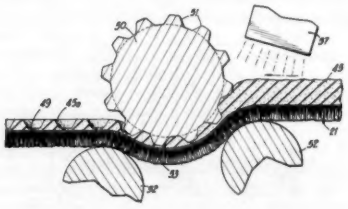
with a non-ferrous, leaf-simulating material comprising ground rubber-like foam particles.

4,278,482

APPARATUS AND METHOD FOR PRODUCTION OF POLYURETHANE CARPET BACKING

William C. Poteet, Chatsworth; Claude E. Terry, Armuchee; Glen F. Hamrick, Tunnel Hill, and Francis G. Walls, Dalton, all of Ga., assignors to Custom Coating, Inc., Dalton, Ga.

Filed Jun. 26, 1979, Ser. No. 52,092
Int. Cl.³ B32B *31/20*
U.S. Cl. 156—78 **28 Claims**



1. In a method of producing a cushion backing on a substrate, the steps of advancing a substrate and applying directly to one surface thereof an exothermically reactive foamable composition adapted to blow unconfined into a cellular layer on the substrate during a blowing cycle to a thickness greater than the final desired maximum thickness of the cellular layer, and regauging the blown cellular layer after the blowing cycle thereof and while the walls of the internal cells of said layer are tacky to thereby regauge the cellular layer to a permanently reduced and highly uniform thickness across the breadth of said substrate.

4,278,483

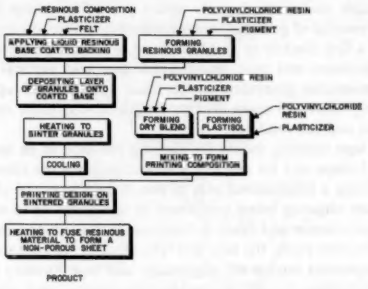
PROCESS FOR PRODUCING DECORATIVE SURFACE COVERING

Robert D. Mansolillo, Bloomfield, N.J., assignor to Congoleum Corporation, Kearny, N.J.

Filed Aug. 31, 1979, Ser. No. 71,454
Int. Cl.³ B32B *31/26, 5/20*
U.S. Cl. 156—79 **10 Claims**

1. In a process for producing a non-porous decorative surface covering having an inlaid decoration comprising depositing very fine granules of resinous composition in a layer at least 0.015 inch in thickness on the surface of a backing sheet, heating to sinter the granules into a porous mass of uniform porosity without complete coalescence thereof, applying a design on the surface of the sintered layer with sufficient printing composition to permeate into the porous structure to a substantial depth at the points of application and then fusing the printed sintered layer into a non-porous sheet by the application of

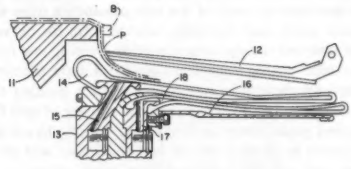
heat, the improvement which comprises utilizing as said printing composition a uniform mixture of a pigmented dry blend of at least two colorations and a transparent or pigmented plastisol so that the resulting product has transparent areas dispersed throughout the fused multicolored dry blend in the areas of printing composition application.



4,278,484
PNEUMATIC SIDE WALL BONDING IN RADIAL TIRE MANUFACTURE

Robert S. McGaughey, Indiana, Pa., assignor to McCreary Tire & Rubber Company, Indiana, Pa.

Filed Dec. 26, 1979, Ser. No. 107,265
Int. Cl.³ B29H *17/18*
U.S. Cl. 156—123 R **3 Claims**



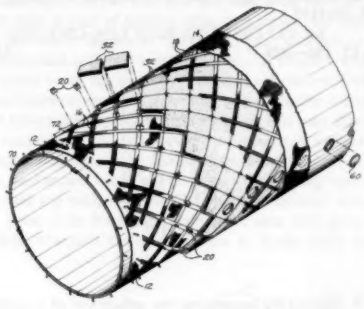
1. In the manufacture of pneumatic tires on a mandrel wherein the underlying tire body is built up on the mandrel, bead rings are applied to that body at the ends of the mandrel and the ply ends are turned up around the bead rings and over the tire body by inflating retractable bladders, the improvement comprising applying sidewall stock to the tire body over and beyond the ply ends while the mandrel is rotating so as to form a cylindrical layer thereon, stopping the mandrel, and while the mandrel is stationary again inflating the bladders to extend them over and against the sidewall beyond the turned over ply ends on the mandrel, thereby bonding the sidewall onto the underlying plies without the use of other means.

4,278,485
METHOD OF FORMING COMPOSITE WOUND STRUCTURE

Robert A. Hamm, Bellevue, and Philip C. Whitener, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 930,457, Aug. 2, 1978, Pat. No. 4,230,293. This application May 14, 1980, Ser. No. 149,890
Int. Cl.³ B65H *81/04*; B64C *1/00*
U.S. Cl. 156—173 **7 Claims**

1. A method of preparing a composite fuselage, the steps comprising: utilizing a collapsible mandrel having a plurality of outwardly extending index pins, covering the mandrel with a layer of resin impregnated filaments wound with fiber orientation $\pm 10°$ and at $\pm 80°$ while setting the windings around the index pins so that the pins protrude through, reinforcing the covering with cap strips of resin impregnated filaments wound with fiber orientation at about $\pm 45°$ and the filaments intersect at and settle around the index pins, placing a recessed spacer plug over each index pin, positioning contoured panels with corners of each panel located by adjacent plugs and edges of

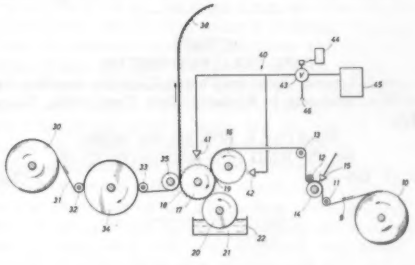


the panels abutting to cover the surface, winding cap strips with resin impregnated filaments and intersecting the strips over each plug, covering with a layer of resin impregnated filaments wound with fiber orientation at $\pm 10°$ and at $\pm 80°$, curing the resins to form a composite structure, and removing the mandrel with indexing pins.

4,278,486
METHOD AND APPARATUS FOR CORRUGATING PAPERBOARD

Edward H. Schrader, 306 Ross, Mart, Tex. 76664

Filed Apr. 29, 1976, Ser. No. 681,732
Int. Cl.³ B32F *1/36*
U.S. Cl. 156—231 **8 Claims**



1. A method for manufacturing faced corrugated paperboard which comprises the following steps:

continuously supplying a web of single-faced corrugated medium,

continuously supplying a web of linerboard,

applying a solid lubricant in a carrier medium and in a manner effective to transfer at least a portion of said solid lubricant to one face of said linerboard without transfer of said carrier medium to said one face,

applying an adhesive to crests of the flutes of said corrugated medium,

securing said linerboard to said corrugated medium to form faced corrugated paperboard,

passing said faced corrugated paperboard through a hot plate section for curing said adhesive and drying said faced corrugated paperboard, said lubricated one face of said linerboard contacting the stationary surface of said hot plate section for reducing the coefficient of friction therebetween.

4,278,487

METHOD OF ENGAGING A SELF-CLAMPING SEALING STRIP ON A RETAINING FLANGE

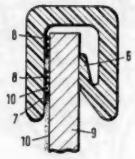
Rolf Hormanns, Hamburg, Fed. Rep. of Germany, assignor to Schlegel GmbH, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,054

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1978, 2807115

Int. Cl.[3] **C09J** *5/02;* **B32B** *3/04;* **C09J** *7/02*

U.S. Cl. 156—305 **13 Claims**



1. A method for improving the adherence of a sealing strip onto a retaining flange in which the sealing strip has a self-clamping channel-section body portion of a first material upon which a solvent has little if any dissolving effect comprising the steps of:

securing, onto the body portion, flange engaging surfaces of a second material upon which the solvent has a greater dissolving effect;

applying the solvent on one of the flange or flange engaging surfaces; and

mounting the sealing strip onto the flange whereby the solvent in engagement with the flange engaging surfaces produces surface or shallow dissolution therein for adhereing the flange engaging surfaces to the flange, the solvent further engaging the body portion slightly if at all so as to have little if any dissolving effect on the body portion which thereby retains its full clamping strength.

4,278,488

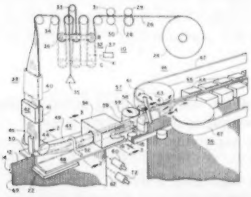
TAPE DELIVERY SYSTEM

Thomas J. Kopacz, Omro, and Charles J. Jacoby, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 1, 1979, Ser. No. 80,881

Int. Cl.[3] **B26D** *5/20;* **B32B** *31/10, 31/18*

U.S. Cl. 156—351 **4 Claims**



1. A tape delivery system for use in forming a plurality of extremely flexible and somewhat flimsy plastic bags from sequentially provided lengths of plastic tube stock and plastic tape; wherein a tube stock source supplies a predetermined length of tube stock systematically and in consecutive order to said tape delivery system; and wherein an initial length of tape is threaded through said tape delivery system to initiate the bag forming operation, said system comprising:

(a) a tape supply source;

(b) a tape accumulator for accumulating sequentially a predetermined length of tape from said supply source, said accumulator including tension control means for controlling the tension of the tape so as to prevent tape stretching and tape overrun;

(c) vertical guide means disposed to receive each length of tape from said accumulator during the advancement of the tape, said vertical guide means providing means for the removal of particles and/or debris collected on the tape;

(d) a first electric eye unit disposed to sense tape movement between said tape accumulator and said vertical guide means for generating an electrical signal to said tape supply source to cause another length of tape to be supplied to said accumulator;

(e) tape forming means for shaping the tape in an inverted U-shape and for aligning a bottom edge of the tube stock along a longitudinal axis of the shaped tape, the shaping and aligning being performed in a manner as to smooth out creases and folds in the tape during advancement of the tube stock, the tape and tube stock being kept spatially separated during the alignment; said tape forming means including, (1) an adjustable tape guide spool disposed between said vertical guide means and said tape forming means for guiding the tape from said vertical guide means to said tape forming means and for adjusting the tension of the tape being advanced; (2) a first L-shaped tape guide plate; (3) a second L-shaped tape guide plate having a leg extending parallel to a leg of said first guide plate and a base extending parallel but opposed to a base of said first guide plate, said second guide plate being spatially separated from said first guide plate providing a guide passage for the bottom margin region of the tube stock as each length of tube stock is advanced through said tape forming mean; (4) a half-round, primary tape forming rod disposed upon a top surface of said first and second tape guide plates, said rod having one end bent to extend vertical and in-line with the path of the tape advancing from said tape guide spool, said rod being used to form the curvature of the tape and to oppose undesirable creasing and folding of the tape during tape transfer; (5) a tape forming wire disposed about said half-round rod for guiding the tape over the rod and against the base and leg of said first and second guide plates; and (6) a tape forming block disposed adjacent to another end of said half-round and about said first and second L-shaped tape guide plates to further shape the tape before the tape is applied to the bottom region of the tube stock; and

(f) means for applying the tape around the edge of the advancing tube stock which is in alignment with the longitudinal axis of the tape.

4,278,489

WEB SPLICING APPARATUS

John K. Horsley, High Wycombe, England, assignor to Molins Limited, London, England

Filed Dec. 3, 1979, Ser. No. 99,826

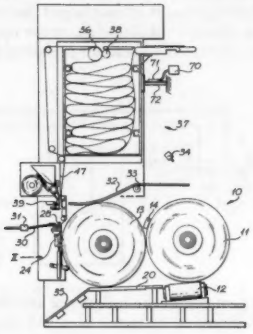
Claims priority, application United Kingdom, Dec. 2, 1978, 46990/78

Int. Cl.[3] **B31F** *5/06;* **B65H** *19/12, 25/08*

U.S. Cl. 156—361 **10 Claims**

1. A bobbin changer for use in producing a continuous web from a succession of reels, including a storage arrangement for storing a number of reels, a reel unwinding station arranged to receive successive reels from the storage arrangement, means for initially rotating each new reel at the unwinding station in a reverse direction which is opposite to the direction of rotation during unwinding, a suction head which is mounted adjacent to the reel and is arranged to pull the leading end portion of the web away from the reel as it approaches the suction head, and end detecting means for detecting when the leading

end portion of the web reaches a predetermined position and for discontinuing the reverse drive on the reel in response



thereto, and means responsive to said end detecting means for initiating a splicing operation.

4,278,490

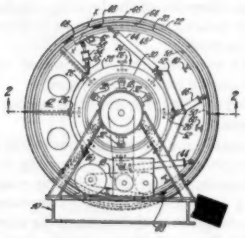
SLEEVE FOR CHANGING DIAMETER OF COLLAPSIBLE MANDREL

Robert G. Pistole; Walter A. Stoll, both of Toledo, Ohio, and Leo A. Oswald, Huntingdon, Pa., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 21, 1979, Ser. No. 106,135

Int. Cl.³ B65H *81/00*; B29C *1/00*

U.S. Cl. 156—425 **3 Claims**



1. For use with a mandrel having an elongated longitudinally slit collapsible tubular shell rotatable about a horizontal axis and providing a molding surface for pipe of one diameter, the mandrel being supported from only one end and having an opposite end unobstructed at all times for ready removal of pipe axially of the mandrel, an elongated longitudinally slit tubular sleeve removably mountable on the mandrel shell concentrically therewith to provide a molding surface for pipe of a larger diameter than said one diameter, the sleeve being collapsible simultaneously with the mandrel shell when mounted thereon.

4,278,491

MACHINE FOR MAKING RESIN PANELS

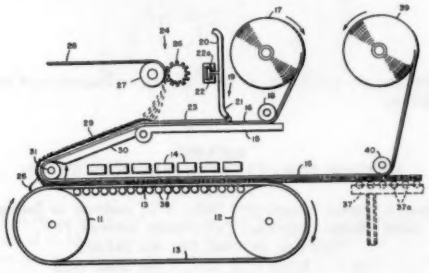
Donald B. Morse, Joliet, Ill., assignor to Kemlite Corporation, Joliet, Ill.

Continuation of Ser. No. 626,105, Oct. 28, 1975, abandoned, which is a continuation of Ser. No. 474,372, May 30, 1974, abandoned. This application May 13, 1977, Ser. No. 796,674

Int. Cl.³ B29B *7/14*

U.S. Cl. 156—501 **7 Claims**

1. A machine for making a resin impregnated glass fiber panel comprising a substantially horizontal support, a carrier film on said support, means for depositing on said carrier film a layer of liquid thermosetting resin, means for depositing a layer of glass fibers on said resin whereby the lowermost of the fibers of said glass fiber layer are embedded in said resin thus to form a laminated structure having said film on its one side, a liquid resin layer next to said film and said glass fiber layer on its other side, a pair of spaced rolls, one above the other, an endless belt about the lower roll of said pair, said belt extending between said rolls and being of a material which is impervious to liquid resin, the spacing between said rolls providing a nip therebetween, means for passing said structure along said support across the top of the upper roll of said pair down the side of said upper roll and under said upper roll with its film side next to said upper roll and with its glass fiber layer on the outside, said means being effective also for passing said structure to said nip with its glass fiber layer in contact with said belt to press resin from said resin layer into said glass fiber layer, said structure containing resin in liquid form as it is



passed by said means about said upper roll and to said nip, means for heating the resulting structure after it emerges from said nip and while it is on said belt and while it has the same form and thickness as it has when it emerges from said nip, to cure said resin, said resulting structure including said film and a layer of combined resin and glass fibers with said layer of combined resin and glass fibers next to said belt, means including a horizontal section of said belt, for supporting said resulting structure thereon from the time it emerges from said nip until it passes said heating means and said resin is cured, a pivoted leaf support for receiving said structure from said first mentioned support, said pivoted leaf support having its movable end connected with the axis of said upper roll whereby said end may move up and down along said upper roll and about the pivot of said support, and means for elevating or lowering said upper roll with respective said lower roll whereby to adjust the spacing between said rolls and correspondingly to adjust the inclination of said pivoted support.

4,278,492

FREQUENCY TRIMMING OF SURFACE ACOUSTIC WAVE DEVICES

Peter S. Cross, Palo Alto, and William R. Shreve, Sunnyvale, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

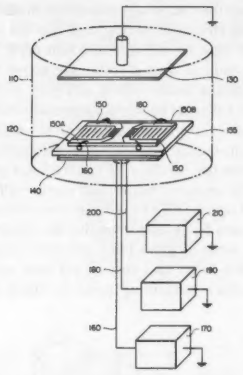
Filed Jan. 21, 1980, Ser. No. 113,832

Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; C23F *1/00*

U.S. Cl. 156—627 **12 Claims**

1. A method of trimming an acoustic device fabricated with a substrate of piezoelectric material and a deposit thereon of

electrode material, comprising the step of dry etching selectively one of the electrode material and the substrate material



between the electrodes to alter the center frequency of said device.

4,278,493

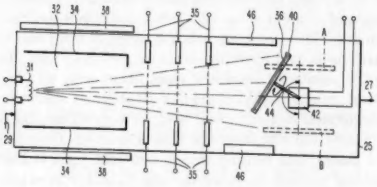
METHOD FOR CLEANING SURFACES BY ION MILLING

Steve I. Petvai, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,461

Int. Cl.³ B08B *3/12, 6/00, 7/00;* **B44C** *1/22*

U.S. Cl. 156—643 **5 Claims**



1. A method for cleaning a substrate having an uneven topographical surface comprising providing an electron beam having a solid angle source of ions with a center line, exposing a planar substrate having an uneven top surface to said solid angle ion beam path, said substrate being located at a predetermined angle with respect to said center line of said ion beam, and continuously revolving said substrate about an axis normal to the plane of said substrate during said exposure.

4,278,494

IMMERSION EVAPORATOR

Launo L. Lilja; Valto J. Mäkitalo, both of Pori, and Timo T. Koivunen, Ulvila, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Apr. 2, 1980, Ser. No. 136,525

Claims priority, application Finland, Apr. 2, 1979, 791094

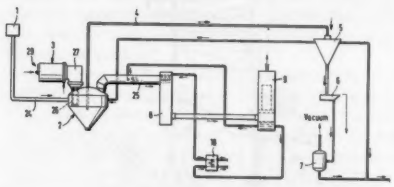
Int. Cl.³ B01D *1/14*

U.S. Cl. 159—16 A **12 Claims**

1. An immersion evaporator of the type comprising:

(a) an evaporation vessel and connected thereto;

(b) a combustion chamber having at one end thereto a burner for liquid or gaseous fuel, the burner comprising a cylindrical combustion gas turbulence chamber for an oxygen-bearing combustion gas, one end of which is convergent in order to increase the angular velocity of the combustion gas before the fuel discharging from the dispersion pipe is mixed with it, the opposite end having a substantially tangential combustion gas inlet conduit connected to a mantle which surrounds at least in part the burner and the combustion chamber, there being, at the opposite end of the mantle, a fuel inlet conduit for preheating the fuel, and



the convergent end of the turbulence chamber continues into the combustion chamber as a cylindrical leveling conduit coaxial with the turbulence chamber, and a fuel dispersion pipe extending coaxially into the turbulence chamber, and having at least such a length that it extends to the distance defined by the formula

$$\frac{H}{D} = \frac{\sqrt{(\frac{d}{D})^2 + \cos\alpha}}{\sin 2\alpha} - \frac{d}{2D}\tan\alpha - \frac{1}{2\tan\alpha}$$

from the inner end of the leveling conduit, in which formula H is the distance between the inlet end of the leveling conduit and the dispersion pipe, α is the angle of convergence of the opposite end of the turbulence chamber, d is the outer diameter of the dispersion pipe, and D is the inner diameter of the leveling conduit;

(c) means for feeding a solution to be concentrated into the evaporation vessel;

(d) means for removing the concentrated solution and any crystals from the evaporation vessel;

(e) means for removing flue gases and vapors from the evaporation vessel; and

(f) an immersion pipe extending substantially vertically inside the evaporation vessel, for directing the hot flue gases below the surface of the solution in the evaporation vessel, and having an upper end which is connected, by means of an angle joint piece to the outlet of the combustion chamber, so that the combustion chamber and the immersion pipe are at an angle in relation to each other.

4,278,495

SEPARATOR APPARATUS FOR EVAPORATOR PLANT

Ulrich Regehr, Susterfeldstrasse 63, D-5100 Aachen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 911,873, Jun. 2, 1978, abandoned. This application Oct. 26, 1979, Ser. No. 88,562

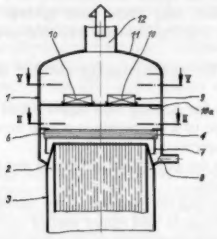
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1977, 2725119

Int. Cl.³ B01D *1/06*

U.S. Cl. 159—27 A **9 Claims**

1. A separator apparatus for an evaporator plant, said apparatus including a housing having an inlet opening connected to heat exchanger means to receive a liquid/vapor mixture therefrom, drop separator means in said housing downstream of said inlet opening, liquid outlet means in said housing upstream of said drop separator means, vapor outlet means in said housing downstream of said drop separator means, liquid-separating means in said housing between said liquid/vapor inlet means and said drop separator means, said liquid-separating means having a substantially vertical throughflow direction, said liquid-separating means comprising fin deflector means including a plurality of fins disposed in the path of the flowing li-

quid/vapor mixture, said fins including a plurality of double reverse bent sections arranged parallel to one another, each set



of adjacent sections defining a substantially vertical inlet and outlet and a pair of substantially reverse flow portions between said inlet and said outlet.

4,278,496

METHOD FOR BLEACHING PULP WITH OZONE

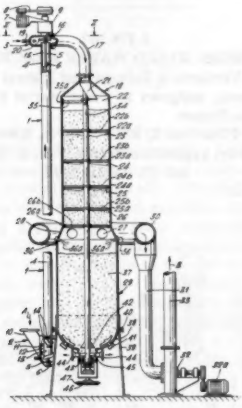
Bjorn H. Fritzvold, Hosle, Norway, assignor to Myrens Verksted A/S, Norway

Continuation of Ser. No. 900,098, Apr. 26, 1978, abandoned. This application Jul. 13, 1979, Ser. No. 57,325

Claims priority, application Norway, Apr. 27, 1977, 771473; Apr. 27, 1977, 771474

Int. Cl.³ B21C *9/10*

U.S. Cl. 162—19 **11 Claims**



1. A method of treating finely divided fibrous pulp comprising the sequential steps of the continuous flow process of:

(a) supplying a finely divided fibrous pulp having a solids content of from about 35 to about 50 percent and a pH of about 5;

(b) treating the pulp with ozone until its pH decreases to from about 2 to 4 while maintaining its solids content;

(c) alkalizing the pulp by mixing it with alkali until the pH is temporarily increased to from about 8 to 12 and the solids content is reduced to from about 15 to about 30 percent; and

(d) permitting the pulp to mature by diffusion, and without further mixing, until it reaches a stable pH of from about 6 to 7, the solid content of from about 15 to about 30 percent remaining unchanged.

4,278,497

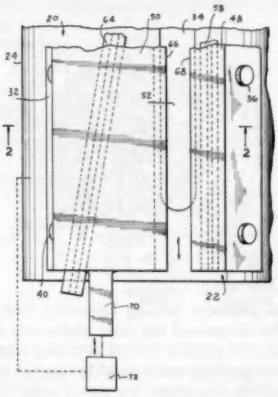
SUCTION DEWATERING SYSTEM WITH AUTOMATICALLY ADJUSTING SUCTION SLOT

Jerre L. Mellen, Glens Falls, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Feb. 14, 1980, Ser. No. 121,400

Int. Cl.³ D21C *1/48, 1/52*

U.S. Cl. 162—252 **7 Claims**



1. A suction dewatering system comprising; a suction device adapted to be connected to a source of suction and having at least one longitudinal opening therein to which suction can be applied and the opening being positioned substantially perpendicular to the direction of a material travelling across the suction device for dewatering thereof, a cover including a base, means on said base for mounting the base to the suction device in fixed position, surfaces on said base forming spaced longitudinal lands and defining a longitudinal slot between each pair of adjacent lands in alignment with said suction device opening, a wear strip removably positioned on each of the lands for engagement with the material passing thereover, at least one of the wear strips being automatically adjustable with respect to the direction of material travel, adjustment means responsive to change in material conditions which results in automatic adjustment of the position of the adjustable wear strip and variance in the slot width accordingly, one of the land and the adjustable wear strip mounted thereon having an oblique slot therein and said oblique slot being angularly directed with respect to the longitudinal slot; and the other of the land and adjustable wear strip thereon having a rail extending therefrom at an oblique angle with respect to the longitudinal slot and extending into and mating with the oblique slot so that when the adjustable wear strip is slidably moved longitudinally it will be shifted laterally with respect to the longitudinal slot thereby changing the width of the longitudinal slot opening.

4,278,498

EARTHQUAKE-PROOF MOUNTING SUPPORT FOR CONTROL-ROD DRIVES OF NUCLEAR REACTORS

Gert Uhlmann; Konrad Schramm, and Georg Kohler, all of Erlangen, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Nov. 3, 1978, Ser. No. 957,326

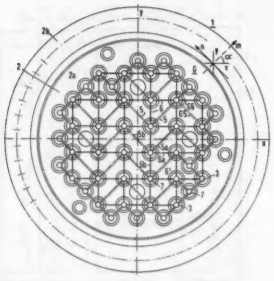
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 2749488

Int. Cl.³ G21C *7/08*

U.S. Cl. 176—36 R **12 Claims**

1. Earthquake-proof mounting support for control rod drives of nuclear reactors having a generally cylindrical reactor pressure vessel formed with a convex wall at least at one

end thereof and including control rods with control rod drive shafts coupled thereto and mounted so as to be movable in axial direction thereof within tubular drive housings extending pressure-tightly through the end convex wall and sealed against the outside, the control rod drive shafts having free ends, and means for connecting the free ends of the control rod drive shafts to one another, the tubular drive housings comprising tube members forming respective feed-through passageways for the control rod drive shafts, said tube members having respective portions thereof extending with respectively varying lengths outside and beyond the convex wall to a given horizontal plane, the connecting means comprising a support grid formed of a plurality of grid bars articulatingly connecting said tube members at respective free ends thereof outside the convex wall, respectively, to one another.



4,278,499

APPARATUS FOR THE PURIFICATION OF A LIQUID METAL FOR COOLING IN THE CORE OF A FAST NEUTRON REACTOR

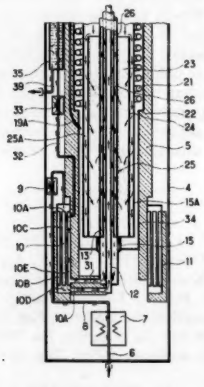
Roger Abramson; Jean-Paul Delisle, both of Manosque; Xavier Elie, Aix en Provence; Guy Salon, Le Chesnay, and Jean-Pierre Peyrelongue, Issy les Moulineaux, all of France, assignors to Commissariat a l'Energie Atomique and Stein Industrie S.A., both of, France

Filed Jun. 16, 1978, Ser. No. 916,149

Claims priority, application France, Jun. 22, 1977, 77 19082

Int. Cl.[3] G21C *19/30, 15/24;* **B01D** *27/00*

U.S. Cl. 176—37 **7 Claims**



1. An apparatus for the purification of coolant liquid metal in a fast neutron nuclear reactor of the type comprising a vessel, a core and coolant liquid metal contained in the vessel, and an upper protective slab closing said vessel, said protective slab having a first removable plug and a second removable plug provided within said first plug, said apparatus comprising:

a vertical elongate insulating envelope suspended from said first plug at an upper end thereof, said envelope being located within said vessel and having inlet means for introducing said liquid metal into said envelope from said vessel,

outlet means for re-introducing purified liquid metal into said vessel,

cooling means for cooling said liquid metal introduced into said envelope to a temperature which ensures the solidification of impurities,

filtering means for purifying said liquid metal cooled by said cooling means,

means for directing the purified liquid metal from the filtering means towards said upper end of said envelope,

valve means suspended from said second plug and located in said upper end of said envelope for regulating the purified liquid metal flow prior to its re-introduction to said vessel through said outlet means,

heat exchange means for at least partial heating of the purified liquid metal prior to its re-introduction to the vessel through said outlet means, and

means for directing the flow of liquid metal to be purified from said inlet means through said heat exchange means, there being provided a triple envelope axial tube, the inner zone of said tube being connected with said heat exchange means for circulating the liquid metal to be purified in an upwards direction after it is partly cooled in said heat exchange means, the intermediate zone of said tube being connected with said valve means for circulating the purified liquid metal coming from said valve means in a downwards direction, and the outer zone of said tube being in communication with said filtering means for circulating the purified liquid metal coming from said filtering means in the upwards direction.

4,278,500

PRESSURIZED WATER REACTOR

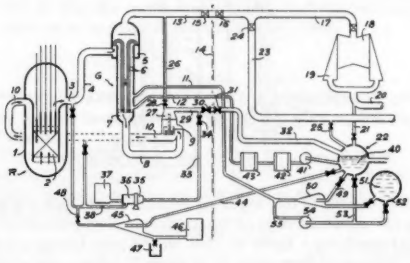
Jean Ailloud, Verrieres le Buisson, and Marcel Monteil, Paris, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 2, 1979, Ser. No. 8,968

Claims priority, application France, Feb. 6, 1978, 78 03207

Int. Cl.[3] G21D *5/12*

U.S. Cl. 176—37 **4 Claims**



1. A pressurized water reactor comprising: a primary fluid circuit, at least one circulating pump for circulating primary fluid within at least one primary loop of said primary circuit, said primary circuit including a steam generator, a pressure vessel which contains a reactor core, and a bundle of tubes in said steam generator, a secondary fluid circuit containing fluid which enters the steam generator in a liquid state and is discharged therefrom in the form of steam which is returned into the generator after expansion within main turbines and recovery in a condenser, said primary circuit including a driving turbine supplied with steam taken from the steam generator,

and fluid circulating pumps each driven by said driving turbine, a feed tank of a water supply unit, an auxiliary turbine, a storage tank and a pump drivingly connected to said auxiliary turbine, each main turbine having an outlet connected to said feed tank by means of conduit means provided with isolating valves and by means of bypass conduit means, for permitting a flow of steam for driving said auxiliary turbine in the event of closure of said isolating valves, and means for injecting high-pressure emergency water into said primary circuit from said storage tank by means of said pump.

4,278,501

SPRING ELEMENT FOR HOLDING DOWN NUCLEAR REACTOR FUEL ASSEMBLY

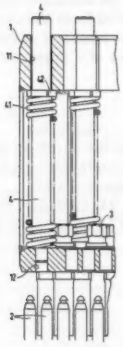
Alexander Steinke, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 944,707

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742946

Int. Cl.³ G21C *3/30*

U.S. Cl. 176—78 **4 Claims**



1. Spring element for holding down and bracing a fuel assembly against a hold-down plate upwardly limiting the reactor core of a nuclear reactor, comprising a spring-loaded rod-shaped member formed independently of the fuel assembly and being slidable axially into the fuel assembly, said rod-shaped member having a plurality of parts telescopically slidable together, and including a compression spring engaging two of said parts and, in neutral position of the rod-shaped member, urging said parts away from one another and forming said rod-shaped member into the greatest possible assumed length thereof, said rod-shaped member, in installed condition thereof, being mounted, at one end thereof, in at least one bore formed in a head of the fuel assembly and engaging the hold-down plate, at the other end thereof.

4,278,502

CHEMICAL RECOVERY APPARATUS

Christopher Stevens, and John B. Stevens, both of Spirella Bldg., Cambridge Rd., Harlow, Essex, England

Continuation of Ser. No. 911,041, May 30, 1978, abandoned. This application Nov. 27, 1979, Ser. No. 97,652

Claims priority, application United Kingdom, May 30, 1977, 22827/77

Int. Cl.³ B01D *3/42;* **F25B** *29/00*

U.S. Cl. 202—206 **4 Claims**

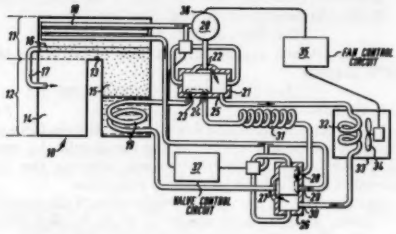
1. An apparatus for purifying liquid in a container comprising:

an enclosed container, said container having first and second adjacent compartments, said first compartment storing a liquid to be purified, said compartments vertically opening into a third compartment above said first and second compartments, said first, second and third compartment forming an enclosure;

a drip tray located within said container above said first and second compartments, said tray having a conduit for directing condensation incident thereto to said second compartment;

a refrigeration means having a coil disposed in said third compartment constituting an evaporator, and a second coil disposed in the bottom of said first compartment constituting a condenser, said refrigeration means further comprising

a second condenser;



a capillary coil;

and a control means for selectively directing a refrigerant through a first circuit of elements and subsequently through a second circuit of elements, said first circuit comprising said condenser, second condenser, capillary coil and evaporator coil during the purification of a liquid in said first compartment, and said second circuit of elements comprising said first condenser, capillary coil, second condenser, and evaporator coil, whereby said control means provides for selectively changing the pressure of the refrigerant entering said evaporator.

4,278,503

LOW BROMINE CONTENT GLACIAL ACETIC ACID

Martin A. Zeitlin, and Jon J. Harper, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 26, 1979, Ser. No. 106,669

Int. Cl.³ B01D *3/14;* **C07C** *51/44, 51/16*

U.S. Cl. 203—28 **3 Claims**

1. The method of preparing an acetic acid product from the liquid reaction effluent obtained from the oxidation of liquid n-butane with oxygen gas at a temperature of from 120° C. up to 235° C. and a gauge pressure from 35 up to 210 kg/cm^2 in the presence of an acetic acid solution of the system of catalysis comprising bromide ions in combination with ions of cobalt or cobalt and manganese which liquid effluent in addition to the contaminants comprising unreacted butane esters and ketones boiling lower than acetic acid; formic propionic acid and butyric acid as well as catalyst metal salts; and oxides of carbon, methane and ethane; also contains 3-bromo-2-butanone as a contaminant; which method comprises decompressing such liquid reaction effluent to a gauge pressure of from 28 down to 0 kg/cm^2 to remove unreacted n-butane and coproduct gases; heating the decompressed liquid to and maintaining said liquid at a temperature of from 150° C. for at least 40 minutes up to a temperature of 200° C. for at least 40 minutes whereat 3-bromo-2-butanone is converted to 1-butene-3-one and one or more inorganic bromides; distilling such heat treated decompressed liquid to remove (a) water and organic materials boiling at a temperature below acetic acid as a first fraction, a second fraction comprising an acetic acid-water fraction containing formic, propionic and butyric acid and 3-bromo-2-butanone not converted to 1-butene-3-one and leaving a third or residue fraction containing inorganic bromides mainly as catalyst metal salts together with other high boiling materials dissolved in acetic acid and liquid at a temperature of from

116° to 150° C.; and subjecting the second distillation fraction to one or more steps of continuous fractional crystallization wherein the crystalline magma formed is washed by countercurrent flow of acetic acid mother liquor, and withdrawing therefrom as product acetic acid, the melt of the last washed crystals.

4,278,504

ISOLATION OF A CONJUGATED DIOLEFIN FROM A C_4- OR C_5-HYDROCARBON MIXTURE

Klaus Volkamer, Frankenthal; Klaus Bröllos, Seeheim; Alfred Lindner, Bobenheim-Roxheim; Ulrich Wagner, Limburgerhof; Hans-Martin Weitz, Bad Duerkheim, and Klaus-Jürgen Schneider, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,903

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911393

Int. Cl.³ B01D *3/40;* **C07C** *7/08*

U.S. Cl. 203—53 **3 Claims**

1. A process for isolating a conjugated diolefin from a C_4- or C_5-hydrocarbon mixture containing the diolefin, by extractive distillation using a selective solvent, wherein the selective solvent is a solvent mixture which comprises

(a) from 50 to 98 percent by weight of an N-alkyl-substituted lower aliphatic acid amide or of an N-alkyl-substituted alicyclic acid amide having 5 ring members and

(b) from 2 to 50 percent by weight of

an aliphatic ether boiling at from 30° C. to 200° C. of the general formula R—O—R′, where the aliphatic radical R is a hydrocarbon radical of 1 to 6 carbon atoms and the aliphatic radical R′ is a hydrocarbon radical of 2 to 6 carbon atoms, or

a dialkyl ether of a dihydric alcohol boiling at from 30° C. to 200° C. of the general formula R^1—[OCH_2—CHR—]$_n$ OR, where R is hydrogen or CH_3, R^1 and R^2 are each a hydrocarbon radical of 1 to 5 carbon atoms, and n is an integer from 1 to 3, or

an alicyclic ether boiling at from 50° C. to 125° C.

4,278,505

PROCESS OF RECOVERING AN N-HEXANE PRODUCT WHICH IS FREE FROM AROMATIC COMPOUNDS

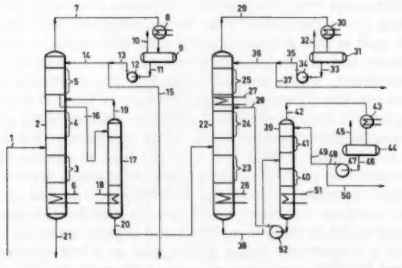
Hans F. Danulat, Frankfurt am Main; Kamar P. John, Bad Homburg; Helmut Klein, Hanau, and Stephen Lukatsch, Dietzenbach, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 949,467

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1977, 2745672

Int. Cl.³ B01D *3/40*

U.S. Cl. 203—59 **9 Claims**



1. A process of recovering an n-hexane product which is substantially free from aromatic compounds by extractably distilling the same from a mixture of aromatic and non-aromatic compounds, consisting essentially of distilling a feed mixture of aromatic and non-aromatic compounds in a two column system to recover a hexane cut consisting of hexane, benzene and small quantities of non-aromatic compounds which boil in the same range as hexane and benzene, which distillation is effected by feeding the mixture of non-aromatic compounds to a first distillation column approximately in the middle thereof and distilling the same therein, withdrawing a benzene-containing sump product and an overhead product consisting of low-boiling non-aromatic compounds from the first distillation, and withdrawing a distillate laterally from the first distillation, at a point disposed above the feeding point of the feed mixture of aromatic and non-aromatic compounds and transferring the same to the upper portion of a second distillation column, withdrawing a sump product consisting of hexane, benzene and small amounts of non-aromatics boiling in the range of both of said components from the second distillation column and feeding the same to an extractive distillation column approximately in the middle thereof and extracting the same therein with an extractive solvent by feeding into the extractive distillation column above the feeding point of the hexane cut consisting of the sump product of the second distillation column, withdrawing a sump product containing the selective solvent from the extractive distillation column, withdrawing vapors overhead from the extractive distillation column and condensing the same and withdrawing the condensate as an N-hexane product of a purity sufficient for use in food processing.

4,278,506

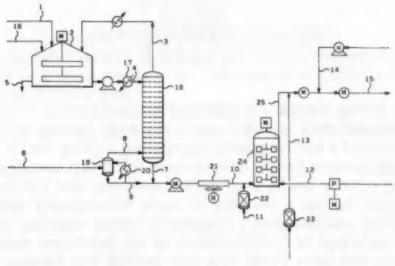
POLYMER SOLUTION PURIFICATION

Howard B. Irvin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 21, 1979, Ser. No. 106,199

Int. Cl.³ B01D *3/36, 3/40*

U.S. Cl. 203—68 **7 Claims**



1. A process for purifying a polymer-solvent mixture which contains undesirable volatile components including water lower boiling than the solvent for further reaction comprising the steps of

passing a polymer-solvent mixture which contains undesirable volatile components including water lower boiling than the solvent to an upper portion of a fractionation-stripping zone and allowing said polymer-solvent mixture to flow downwardly through said zone with separation of the undesirable components as overhead and recovery of the polymer-solvent mixture as bottoms,

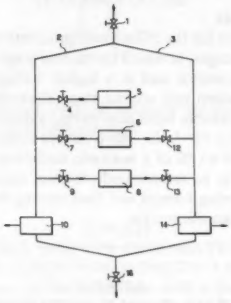
adding vaporized, purified dry solvent obtained from another drying operation and which is the same as the solvent used in said mixture and which is free of said polymer to the kettle portion of the fractionation column to act as a stripping vapor for the undesirable volatile components including water, whereby the problem of reboiler fouling due to the presence of polymer in the stripping solvent is substantially avoided, and passing said polymer-solvent mixture substantially freed of water and other undesirable components recovered as bottoms to said further reaction.

4,278,507

METHOD FOR AMPEROMETRIC MEASUREMENT OF THE FREE-CHLORINE CONTENT IN A SOLUTION

Antoine Derreumaux, 19, bd de Beausejour, 75016 Paris, and Bernard Saunier, 16, rue Gros Malhon, 35000 Rennes, both of France

Continuation-in-part of Ser. No. 860,268, Dec. 13, 1977. This application Oct. 19, 1979, Ser. No. 86,620
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—1 T 5 Claims



1. Method of measuring the free chlorine content in a solution containing chlorine both in free and combined form, comprising the steps of adding an amount of water-soluble iodide to a portion of the said solution to establish in said portion an iodine concentration stoichiometrically equivalent to the amount of total chlorine within said portion; of subsequently introducing said portion between the electrodes of amperometric detecting cell means; of measuring a first current flow through said amperometric detecting cell means as indicative of the total chlorine concentration in the solution; of adding to a further portion of the said solution a nitrite which reacts selectively with free chlorine to transform it into a chloride; of subsequently adding to said further portion an amount of water-soluble iodide to establish in said further portion an iodine concentration which is stoichiometrically equivalent to the amount of combined chlorine within said further portion; of subsequently introducing said further portion between the electrodes of amperometric detecting cell means; of measuring a second current flow through amperometric detecting cell means provided with one copper and one gold electrodes respectively, as indicative of the combined chlorine concentration in the solution; and of obtaining the difference between the said first and second current flows as indicative of the free chlorine concentration in the solution.

4,278,508

METHOD OF DETECTING A CATHODIC CORROSION SITE ON A METALLIZED SUBSTRATE

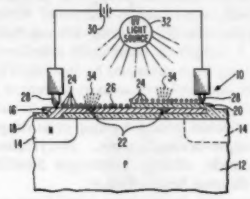
Lawrence K. White, Cranbury; Robert B. Comizzoli, Belle Mead, both of N.J., and George L. Schnable, Lansdale, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,214
Int. Cl.³ G01N *27/00*
U.S. Cl. 204—1 T 11 Claims

1. A method of detecting a cathodic corrosion site on a metallized substrate comprising the steps of:

depositing a relatively thin film of molecules of a pH sensitive fluorescent dye adjacent a metallic surface of said substrate, said metallic surface having a corrosion site thereon characterized by a reduction of the hydronium ion to hydrogen ($2H^+ + 2e^- \rightarrow H_2$) in a moist ambient capable of supplying H^+ ions,

applying an electrical bias across said surface by engaging two contact probes across the surface of said substrate, said electrical bias being sufficient to cause an electrolysis reaction to occur at said corrosion site, and



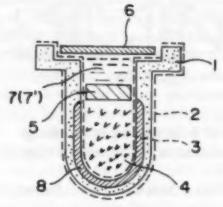
exposing said fluorescent dye to actinic radiation, whereby fluorescence is activated at the cathodic corrosion site.

4,278,509

METHOD OF ACTIVATING OXYGEN CONCENTRATION CELL

Yasuhiro Otsuka; Ryuzo Hori; Shinichi Matsumoto; Kiyoshi Uchida, and Toshinobu Furutani, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 933,476, Aug. 14, 1978. This application Dec. 10, 1979, Ser. No. 101,711
Claims priority, application Japan, Apr. 19, 1978, 53-46080
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—1 T 5 Claims



1. A method of activating and using an oxygen concentration cell having metal electrodes formed on both the inner and outer wall surfaces of a solid electrolyte vessel and a solid pole as a reference oxygen partial pressure source consisting of a metal alone or a mixture of said metal and its oxide packed into said vessel, comprising activating said oxygen concentration cell by heat-treating said oxygen concentration cell in the presence of air to diffuse said metal of the reference oxygen partial pressure source into the solid electrolyte through said inner wall surface metal electrode, said heat treatment comprising heating at a temperature in the range of 1,000°–1,200° C. over a period of 5–120 hours in the air, and then using the cell to measure oxygen concentration at temperatures below 1,000° C.

4,278,510

PLATABLE PROPYLENE POLYMER COMPOSITIONS

James C. W. Chien, Amherst, Mass.; Steven K. Evnochides, and Joseph A. Howlett, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Mar. 31, 1980, Ser. No. 136,138
Int. Cl.³ C25D *5/56*; C08K *3/04, 3/06*
U.S. Cl. 204—14 R 6 Claims

1. A propylene polymer composition having the characteristic of being readily electroplatable with a metal such as nickel to provide a strongly adherent metal coating; said composition consisting essentially of about 100 parts by weight of a propylene polymer, a quantity of electrically conductive carbon black sufficient to reduce the electrical resistivity of the composition to less than about 1,000 ohm-centimeters, a minor

amount of sulfur, of a sulfur donor, sufficient to increase the rate of metal deposition on the polymer, and a minor amount of maleic anhydride-modified propylene polymer sufficient to improve the adhesion of the plated metal to the polymer; said maleic anhydride-modified propylene polymer containing about 0.1 to 5 weight % chemically combined maleic anhydride and having been prepared by heating a propylene polymer and maleic anhydride in an inert solvent in the presence of a free radical generating polymerization initiator; said sulfur donor being selected from the group consisting of sulfur chloride, 2-mercapto-benzoithiazole, N-cyclohexyl-2-benzothiozole sulfonomide, dibutyl xanthogen disulfide, and dipentamethylene-thiuram hexasulfide.

6. In a process for depositing a metal from an electroplating bath onto an article fabricated from a propylene polymer composition in which the article to be plated is employed as the cathode in a metal plating bath and an electric current is applied across the plating bath; the improvement which consists essentially of employing as the propylene polymer composition the propylene polymer composition of claim **1**, **2** or **3**.

4,278,511

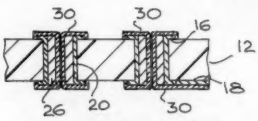
PLUG PLATING

William P. Dugan, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Feb. 28, 1980, Ser. No. 125,805

Int. Cl.³ C25D *5/02, 7/04*

U.S. Cl. 204—15 **17 Claims**



1. A method of hole plating comprising:
providing a dielectric substrate having two opposite side surfaces;
providing selected holes in said substrate between the surfaces;
conductively coating the substrate and hole surfaces;
plating the conductive surfaces; and
removing the plating from the conductive substrate surfaces without removing the plating from the holes.

4,278,512

LOW CONCENTRATION TRIVALENT CHROMIUM ELECTROPLATING SOLUTION AND PROCESS

Donald J. Barclay, and James M. L. Vigar, both of Winchester, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 18, 1979, Ser. No. 86,092

Claims priority, application United Kingdom, Nov. 11, 1978, 44177/78; Sep. 18, 1979, 32300/79

Int. Cl.³ C25D *3/10, 5/14*

U.S. Cl. 204—41 **14 Claims**

1. A chromium electroplating solution in which the source of chromium comprises an equilibrated aqueous solution of chromium (III)-thiocyanate complexes, the chromium concentration being less than or equal to 0.02 Molar, said solution including an amino acid as a Ph buffer material providing at least one of the ligands for the complex.

11. A process of electroplating an article with chromium comprising electroplating the article with a first relatively thick layer of chromium in a first bath in which the source of chromium comprises an aqueous solution of chromium (III)-thiocyanate complexes, the concentration of chromium being greater than 0.03 M, transferring the article without rinsing to a second plating bath, and plating a relatively thin layer of chromium over the first layer in the second bath, the initial concentration of chromium in the second bath being less than or equal to 0.02 M to give a perceptibly lighter colored layer than that of the first layer.

4,278,513

TWO-STAGE DIFFERENTIAL ANODIZATION PROCESS

Richard J. Millard; Walter J. Bernard, and Alfred Whitman, all of Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Jun. 30, 1980, Ser. No. 164,650

Int. Cl.³ C25D *11/12*

U.S. Cl. 204—42 **3 Claims**

1. In a process for the differential anodization of valve-metal pellets in two-stages, in which the second stage is carried out in a different electrolyte and at a higher voltage than the first stage and in which said second stage electrolyte comprises a salt of a water-soluble weak acid having a dissociation constant of less than 1.0×10^{-4}, the improvement comprising the addition of 0.01–1.0 wt % of a nonionic surfactant to said second stage electrolyte to reduce underformed spots in the higher voltage layer being formed and then rinsing the pellets free of said second-stage electrolyte.

4,278,514

BRIGHT PALLADIUM ELECTRODEPOSITION SOLUTION

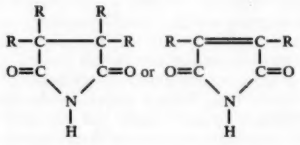
Ronald J. Morrissey, Cranston, R.I., assignor to Technic, Inc., Providence, R.I.

Filed Feb. 12, 1980, Ser. No. 120,914

Int. Cl.³ C25D *3/52*

U.S. Cl. 204—47 **8 Claims**

1. A palladium electroplating solution of pH of about 3-7 containing palladium in the form of a soluble organopalladium complex of an inorganic palladium salt and an organic polyamine complexing agent having 2 to about 8 carbon atoms and 2 to about 5 amino groups complexing agent; said solution being an aqueous solution; and said solution containing about 1-50 grams per liter of an organic imide of the formula



in which each R is independently selected from the group consisting of hydrogen, alkyl of 1–5 carbon atoms and alkoxy of 1–5 carbon atoms.

4,278,515

METHOD FOR REMOVAL OF SODIUM CARBONATE FROM CYANIDE PLATING BATHS

Fred Pearlstein, Philadelphia, Pa., and Carroll F. Evans, Cinnaminson, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

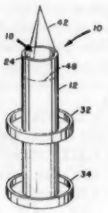
Filed Oct. 15, 1979, Ser. No. 84,964

Int. Cl.³ B01D *9/02;* **C25D** *21/02*

U.S. Cl. 204—55 Y **3 Claims**

1. A method for removing sodium carbonate from a plating bath solution containing same, which comprises immersing therein a container filled with a liquid cooled with dry ice to a temperature sufficient to cause the sodium carbonate to precipitate on the cold exterior surface of the container, maintaining said container immersed in said solution to precipitate the sodium carbonate as an encrustation of crystals on said cold container surface, and removing said container with said en-

crustation of sodium carbonate crystals from said plating bath solution.



2. The method of claim 1, wherein the bath is a sodium cyanide-zinc plating bath solution.

4,278,516

METHOD FOR THE PREPARATION OF 2-FLUORO-4-MONOBROMOMETHYLBIPHENYL

Edward J. Zaiko, and Paul F. Ranken, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 28, 1979, Ser. No. 53,060
Int. Cl.³ B07J 1/10; C07C 25/18
U.S. Cl. 204—158 HA **4 Claims**

1. A method for the preparation of 2-fluoro-4-monobromomethylbiphenyl which comprises reacting 2-fluoro-4-methylbiphenyl with N-bromosuccinimide or bromine under irradiation with light.

4,278,517

OSMIUM CATALYZED HYDROXYLATION OF OLEFINS WITH SELENOXIDE COOXIDANTS

Anthony G. Abatjoglou, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,313
Int. Cl.³ B01J 19/12; C07C 31/20, 31/27
U.S. Cl. 204—158 R **9 Claims**

1. A process for producing glycols by the catalytic oxidation of olefinic compounds which comprises contacting an olefinic compound with an organic selenoxide in an aqueous alkaline medium in the presence of a catalytic amount of octavalent osmium to form the corresponding glycol.

9. The process of claim 1 wherein the selenoxide is regenerated from the reduced selenide with photochemically generated singlet oxygen.

4,278,518

METHOD FOR REDUCING THE MONOMER RESIDUE CONTENT IN POLYMER PLASTICS

Bengt Bjellqvist, Stockholm; Torbjörn Reitberger, Skarholmen, both of Sweden, and Kennard H. Morganstern, Roslyn, N.Y., assignors to Radiation Dynamics, Inc., Long Island, N.Y.

Filed May 16, 1978, Ser. No. 906,551
Int. Cl.³ C08J 3/28
U.S. Cl. 204—159.2 **10 Claims**

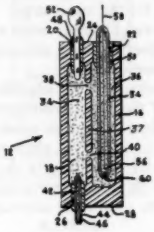
1. A method for reducing the residue content of halogen-substituted unsaturated hydrocarbon monomer in a homopolymer or copolymer plastic material derived from said monomer comprising irradiating said plastic material with ionizing radiation at a rad dosage level of from 0.050–2 megarads.

4,278,519

ELECTRODE ASSEMBLY FOR DETERMINING THE IDENTIFICATION OF METALS AND METAL ALLOYS

Vann Y. Won, 6697 Gloria Dr., Sacramento, Calif. 95831

Filed Jan. 25, 1980, Ser. No. 115,515
Int. Cl.³ G01N 27/32
U.S. Cl. 204—195 F **3 Claims**



1. An electrode assembly for determining the identification of an unidentified metal comprising a test probe and means for registering the potential difference between said test probe and said unidentified metal, said test probe having a longitudinally extending body, said body being hollow on the interior thereof, a longitudinally extending wall located within said hollow interior of said body, said wall dividing said hollow interior of said body into a first and a second chamber for containing a saturated water solution of potassium chloride, said wall having at least one opening therein for interconnecting said first chamber with said second chamber, a longitudinally extending thin-walled hollow tube for containing a saturated liquid mercury solution containing granular calomel and potassium chloride, said tube being positioned within said second chamber and having an open end situated within said second chamber, an absorbent material located within said open end, a conductive wire located within said tube and protruding from said tube and said test probe at one end of said test probe, and opening formed at said one end of said test probe adjacent said first chamber for allowing the introduction therein of said saturated water solution of potassium chloride, an apertured tip connected to the other end of said test probe adjacent said first chamber, an absorbent material located within said apertured tip, and said means for registering said potential difference being capable of electrically connecting said conductive wire to said unidentified metal thereby enabling the registration of a potential difference between said test probe and said unidentified metal and whereby any gas bubbles formed in said test probe during said registration remains in said first chamber.

4,278,520

CONTINUOUS GOLD ELECTROPLATING APPARATUS

Dennis R. Turner, Chatham Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 911,099, May 31, 1978, abandoned. This application Aug. 8, 1979, Ser. No. 64,771
Int. Cl.² C25D 17/18, 17/28, 5/02
U.S. Cl. 204—207 **10 Claims**

1. An apparatus for continuous electrochemical processing on a continuous metallic strip using a plurality of processing steps carried out in a plurality of processing cells including a gold electroplating cell, said gold electroplating cell comprising a long narrow container with provision for the continuous metal strip which is the cathode in the gold electroplating process, provision for gold electroplating solution and anode comprising:

(a) means for making electrical contact to the metallic strip, said means comprising a spring loaded rectangular member rounded-off at the end and pressing against the metal

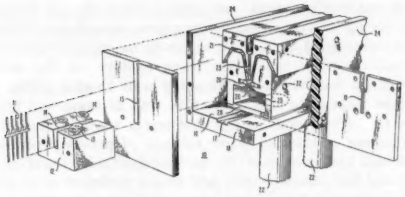
strip line and two stationary round members located on the other side of the strip line and located before and after the spring loaded rectangular member, said rectangular and round members made of conducting material;

(b) a first slotted section for admitting metal strip into an entrance spill-over chamber, said slotted section being deep enough to admit at least a portion of the metal strip into the gold electroplating cell and wide enough to provide clearance for the metal strip;

(c) a first spill-over chamber with a cutaway section to convey gold electroplating solution to a drainage tube leading to a reservoir;

(d) a second slotted section for admitting the metal strip into a main part of the gold electroplating cell said slotted section being deep enough to admit at least a portion of the metal strip into the gold electroplating cell and wide enough to provide clearance for the metal strip;

(e) a main part of the gold electroplating cell comprising a drain-off tube to return the electroplating solution to a reservoir;



(f) a third slotted section for admitting the metal strip into a second spill-over chamber said slotted section being deep enough to admit at least a portion of the metal strip into the gold electroplating processing cell and wide enough to provide clearance for the metal strip; and

(g) a fourth slotted section which is deep enough to admit at least a portion of the metal strip into the gold electroplating cell and wide enough to provide clearance for the metal strip, characterized in that

(1) the main part of the gold electroplating cell comprising in addition a long slotted section running down the center of the cell in which the metal strip fits, said long slotted section being located on the mirror plane which runs down the length of the main part of the gold electroplating cell; anode comprising long bar and located on each side of the mirror plane and running the length of the main part of the gold electroplating cell; a series of side walls and inner walls which permits electroplating solution to be conveyed from an inner tube, up the side of the cell and down onto the area around the anode and the long slotted section where the metal strip is located.

4,278,521

ELECTROCHEMICAL CELL

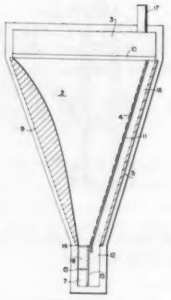
Gerhard Kreysa, Liederbach, Fed. Rep. of Germany, assignor to DECHEMA, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 910,829, May 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 796,821, May 13, 1977, abandoned. This application Jan. 15, 1980, Ser. No. 112,318

Int. Cl.³ C25D *17/12;* **C25C** *7/02*

U.S. Cl. 204—222 **9 Claims**

1. An electrochemical cell comprising a feeder electrode having a surface, a diaphragm or membrane, a porous or a packed bed electrode confined therebetween having a geometrical bed depth that is increased from the electrolyte inlet plane to the electrolyte outlet plane of the electrode such that said geometrical bed depth fulfills the functional equation



$$h(l) = \left(\frac{v \cdot \chi_s \cdot d_p(\eta - 0.12)\beta}{3(l - v)k \cdot z \cdot F \cdot c_o}\right)^{\frac{1}{3}} \left(\exp \frac{k \cdot A \cdot l}{2u}\right)$$

wherein

A: specific electrode area (cm^2/cm^3);

c_o: initial concentration (mol/cm^3);

d_p: particle diameter (cm);

F: Faraday number (As/val);

h(l): bed depth as l (cm);

k: Mass transfer coefficient (cm/s);

l: length coordinate of the electrode (cm);

v: voidage;

z: charge number of reaction (val/mol);

β: current efficiency;

η: overvoltage at the bed electrode (v);

χ_s: electrolyte conductivity (S/cm);

the geometry of the feeder electrode being such that said equation is satisfied and at each point l the distance between feeder electrode surface and diaphragm (or membrane) is equal to h (l).

4,278,522

APPARATUS FOR TREATING CONTAMINATED WATER

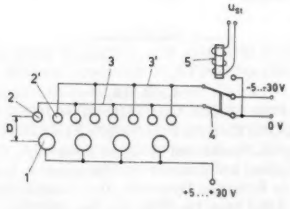
Gernot Jacob, Nussbaumen, and Luciano Pelloni, Zurich, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jun. 18, 1979, Ser. No. 49,065

Claims priority, application Switzerland, Aug. 23, 1978, 8913/78

Int. Cl.³ C25B *15/02, 11/03, 11/10*

U.S. Cl. 204—228 **5 Claims**



1. Apparatus for treating contaminated water by means of electroflotation; comprising:

a multiplicity of positively biased anode electrodes each having a cylindrical shape;

a pair of cylindrically shaped cathode electrodes respectively associated with each anode electrode said cathode

and anode electrodes forming a grid-like screen, further wherein every second cathode electrode in said screen is connected to a common conductor bar; and

means for alternately applying a negative potential to only one of the cathode electrodes in each pair of cathode electrodes while maintaining the other of said cathode electrodes at a non-negative potential.

4,278,523
CLAMPING DIAPHRAGMS OR MEMBRANES IN ELECTROLYTIC CELLS

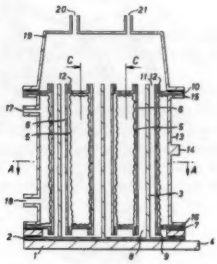
Geoffrey C. Byrd, Frodsham, and Colin Stanier, Northwich, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 20, 1979, Ser. No. 59,448

Claims priority, application United Kingdom, Jul. 28, 1978, 31585/78; Nov. 10, 1978, 43954/78

Int. Cl.³ C25B *9/00, 13/02, 11/03*

U.S. Cl. 204—252 **16 Claims**



1. An electrolytic cell comprising: a plurality of anodes; a cathode box providing a plurality of cathodes so positioned that an anode is located between each pair of adjacent cathodes; a diaphragm or membrane located between adjacent anodes and cathodes; first and second diaphragm- or membrane-supports having lips defining slots therein and made of a material which is resistant to the conditions prevailing in the cell, the supports being located such that the slots in the first support are in alignment with the slots in the second support; the edges of the diaphragms or membranes being sealed to the lips defining the slots in the supports whereby the arrangement of diaphragms or membranes and the slots in the supports define spaces into which the anodes extend; and each diaphragm or membrane being sealed to the lips defining a slot in the support by means of one or more clamps which form an essentially leak-tight seal between the diaphragm or membrane and the lips of the support over substantially the entire extent thereof, each clamp comprising co-operating inner and outer clamp members of which at least the inner clamp member comprises a flexible strip or band for spreading the force exerted by the one or more clamps to provide effective sealing.

4,278,524
DIAPHRAGMS FOR USE IN THE ELECTROLYSIS OF ALKALI METAL CHLORIDES

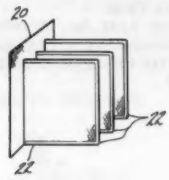
Igor V. Kadija, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 836,636, Sep. 26, 1977, Pat. No. 4,184,939, and Ser. No. 947,235, Sep. 29, 1978, Pat. No. 4,207,163. This application Dec. 21, 1979, Ser. No. 106,219

Int. Cl.³ C25B *13/04*

U.S. Cl. 204—252 **14 Claims**

13. In an electrolytic diaphragm cell for the electrolysis of aqueous solutions of ionizable compounds, said cell having an anode assembly containing a plurality of anodes, a cathode assembly having a plurality of cathodes, a diaphragm separating said anode assembly from said cathode assembly, and a cell body housing said anode assembly and said cathode assembly, the improvement which comprises a porous diaphragm comprising a support fabric impregnated with particles of an inorganic clay of the montmorillonite group.



4,278,525
OXYGEN CATHODE FOR ALKALI-HALIDE ELECTROLYSIS CELL

Lawrence J. Gestaut, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Apr. 24, 1978, Ser. No. 899,548

Int. Cl.³ C25B *11/03, 11/12, 9/00*

U.S. Cl. 204—265 **14 Claims**

1. An oxygen cathode for alkali metal halide electrolysis processes comprising a mixture of a prefused composite of polytetrafluoroethylene and carbon black sintered under high pressure and at a temperature in excess of the sintering temperature of the polymer but below its temperature of decomposition to form an electrode substrate and an electrocatalyst applied to said substrate, the substrate having sufficient porosity so that the potential of the reduction reaction of oxygen at the electrode-electrolyte-gas interface is lower than the hydrogen discharge potential at the surface of steel cathodes.

4,278,526
APPARATUS FOR ELECTROLYSIS OF AN AQUEOUS ALKALI METAL CHLORIDE SOLUTION

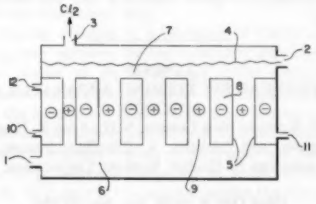
Tokuzo Iijima, Kobe; Yasushi Samejima, Kakogawa; Kazuo Kishimoto; Takamichi Komabashiri, both of Takasago, and Toshiji Kano, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1979, Ser. No. 104,773

Claims priority, application Japan, Dec. 28, 1978, 53-163590; Jul. 2, 1979, 54-91757[U]

Int. Cl.³ C25B *9/00*

U.S. Cl. 204—266 **4 Claims**

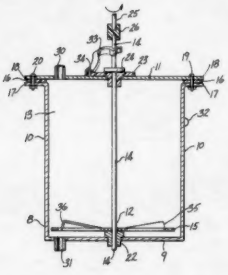


1. Apparatus for the electrolysis of an aqueous alkali metal chloride solution comprising an electrolytic cell which is partitioned by a cation exchange membrane into an anode chamber and a cathode chamber, wherein at least one anolyte solution exit is positioned to the anode chamber above the upper end of the cation exchange membrane, and wherein a gas-liquid interface having a surface area, at which halogen gas generated in the anode chamber is separated from the anolyte solution, is larger than the sum total of the horizontal cross section areas of unit anode chambers opposing to cathodes.

4,278,527
ELECTROLYTIC CELL FOR PURIFYING AQUEOUS SOLUTIONS OF ALKALI METAL HYDROXIDES

Ronald L. Dotson, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 3,151, Jan. 15, 1979, Pat. No. 4,189,362.
This application Oct. 1, 1979, Ser. No. 80,758
Int. Cl.³ C25B *9/00, 11/02*
U.S. Cl. 204—272 **11 Claims**



1. An electrolytic cell for electrolyzing an aqueous solution of an alkali metal hydroxide containing an impurity of a soluble heavy metal complex, comprised of

(a) a conductive bottom,

(b) conductive sides secured to said conductive bottom, said sides having an insulated flange at the top thereof, and forming in combination with said conductive bottom a first electrode,

(c) a cell cover positioned atop said insulated flange to form an electrolytic chamber,

(d) an inlet for feeding said solution into said cell and an outlet for removing purified solution from said cell,

(e) a rotatable assembly comprised of

(1) at least one rotatable shaft,

(2) at least one second conductive metal electrode secured to said shaft and positioned adjacent to but spaced apart from said conductive bottom,

(3) said second conductive metal electrode having at least one fluted vane with at least one adjacent aperture therein so that when rotated said fluted vane agitates said aqueous solution while the aqueous solution is deflected through said aperture towards the conductive bottom, and

(f) means for maintaining a potential difference between said first conductive metal electrode and said second electrode.

4,278,528
RECTILINEAR SPUTTERING APPARATUS AND METHOD

Manfred R. Kuehnle, New London, N.H.; Arno K. Hagenlocher, Framingham, and Nicholas A. Giardino, Sharon, both of Mass., assignors to Coulter Systems Corporation, Bedford, Mass.

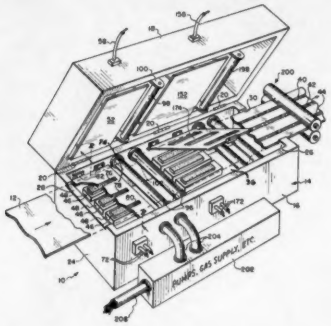
Filed Oct. 9, 1979, Ser. No. 83,220
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **15 Claims**

1. A sputtering apparatus for applying a sputtered coating onto a substrate member in the form of a continuous web passing through the apparatus which comprises:

A. a coffer of metallic construction adapted to be grounded and having a closure member and a body member, the closure member adapted to be at least partially removed from the body member to expose the interior of both members and adapted to be brought into engagement with the body member in face-to-face sealed engagement to provide a substantially sealed chamber on the interior of the coffer,

B. air lock means at opposite ends of the coffer arranged to enable a substrate member in the form of an elongate, flat, continuous web to pass into said chamber at an end of the coffer, substantially rectilinearly through said chamber and out of the other end of the coffer without varying the physical conditions within said chamber,

C. sputtering target means adapted to be made of a material which is to be sputter-coated onto said web, and anode means, the target and anode means being arranged in flat planes parallel to one another and spaced apart to provide sputtering gaps, said target and anode means being mounted in said coffer, the target means being mounted to one of the closure member and body member, the mountings being such that the gaps are formed when the closure and body members are in said face-to-face engagement,



but said target means and anode means are separated substantially from one another when the closure member is so separated from the body member,

D. means within the coffer for guiding said web to pass through said gaps in said coffer, said guiding means including at least a part carried by said closure member and a part carried by said body member, said parts adapted, when operative, to be in engagement and to have said web between them, but being separated when said closure member is so removed from said body member whereby to enable said web to be placed in position for becoming subsequently engaged between said parts without breaking said web, and

E. said coffer having means for establishing and maintaining sputtering conditions in said chamber when sealed and while said substrate member is passing through including means for connecting the target and anode means to a source of r.f. energy.

4,278,529
PROCESS FOR SEPARATING BITUMINOUS MATERIALS WITH SOLVENT RECOVERY

Junior A. Gearhart, Oklahoma City, Okla., assignor to Kerr-McGee Refining Corporation, Oklahoma City, Okla.

Filed Jun. 30, 1980, Ser. No. 164,591
Int. Cl.³ C10C *3/00, 3/08*
U.S. Cl. 208—309 **15 Claims**

5. A process comprising:

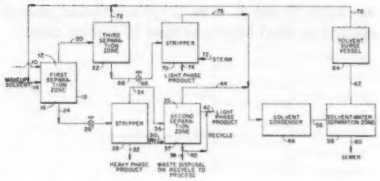
separating an admixture comprising (i) a residuum comprising asphaltenes, resins and oils and (ii) a solvent in a first separation zone into a first light phase comprising oils and solvent and a first heavy phase comprising asphaltenes, resins and some solvent by maintaining the mixture at an elevated temperature and pressure;

reducing the pressure on said first heavy phase to vaporize at least a portion of the solvent present therein and form a mixture of fluid-like asphaltenes and resins in association

with said vaporized solvent together with undesired fine particles of asphaltenes and resins dispersed therein;

introducing said mixture into a steam stripper;

introducing steam into said steam stripper to contact said mixture to vaporize at least a portion of any nonvaporized solvent remaining therein to form at least one stream comprising said fluid-like asphaltenes and resins and one other stream comprising said steam and vaporized solvent together with said fine particles of asphaltenes and resins dispersed therein;



introducing said stream comprising said steam, vaporized solvent, and fine particles of asphaltenes and resins into a second separation zone;

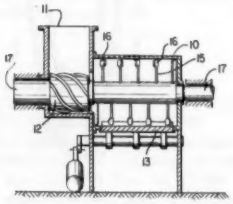
contacting said stream introduced into said second separation zone with a stream comprising at least a portion of said first light phase to scrub said fine particles of asphaltenes and resins from said vaporized solvent; and

recovering said solvent from second separation zone substantially free of any fine particle size asphaltenes and resins.

4,278,530
PROCESS FOR SEPARATING BITUMEN FROM A BITUMEN SAND DEPOSIT

Zenas Crocker, Westmount, and Wilford B. Jonah, Nobleton, both of Canada, assignors to Synergistics Chemicals Limited, Concord, Canada

Filed Aug. 6, 1979, Ser. No. 63,867
Int. Cl.³ B03B 1/00
U.S. Cl. 209—3 **5 Claims**



1. A process for separating bitumen from a bitumen sand deposit including sand particles having coatings of bitumen thereon, comprising the steps of:

feeding bitumen sand deposit and a dispersing medium into an enclosed container having a plurality of arms therein, adapted to rotate about a central axis, each arm having a blade at the end thereof,

rotating the plurality of arms, striking and impelling the sand particles to impact on internal surfaces of the blades and container and with other particles, the blades having sufficient tip speed to cause separation of the bitumen coatings from the particles, without further treatment thereof,

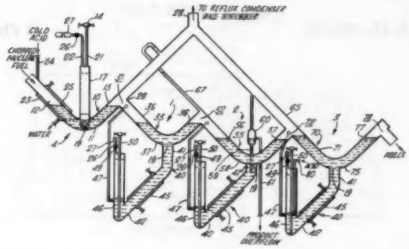
discharging the sand particles, bitumen and dispersing medium from the container, and

collecting the bitumen separately from the sand particles and dispersing medium.

4,278,531
APPARATUS AND METHOD FOR TRANSPORTING ITEMS

Thomas D. Hodgson, and Tony W. J. Jordan, both of Abingdon, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 8, 1979, Ser. No. 64,910
Claims priority, application United Kingdom, Aug. 9, 1978, 32746/78
Int. Cl.³ B07B 1/00
U.S. Cl. 209—11 **13 Claims**



1. Apparatus for transporting from a receiving station to a discharge station items capable of being transported in a liquid, the apparatus comprising,

(a) an inlet duct for receiving items, the inlet duct having at the upper end thereof a receiving station and extending downwardly therefrom;

(b) an outlet duct connected at one end thereof to the inlet duct at a region thereof below the receiving station, the outlet duct having a discharge station at the upper end of said outlet duct and extending upwardly from the region to the discharge station;

(c) port means at the region and comprising a permeable barrier means for fine particulate material from the items to pass therethrough at the lower portion of the region;

(d) duct means extending at one end thereof from said region at said port means;

(e) means connectable to the other end of the duct means for applying pressure pulses to a liquid in the apparatus as to displace the liquid in the inlet duct and the outlet duct upwardly and thereby transport the items through the apparatus to the discharge station.

4. A method of transporting from a first receiving station to a last discharge station items capable of being transported in a liquid, the method comprising,

(a) containing a liquid in a plurality of ducts, each duct having two portions thereof upwardly extending from a lower region of the duct, said lower regions having thereat a barrier permeable to fine particulate material from the items, and one of the portions having a receiving station at the upper end thereof and the other portion having a discharge station at the upper end thereof, the ducts being connected together in series relationship so that the first duct in the series provides the first receiving station and the last duct in the series provides the last discharge station;

(b) feeding the items into the first receiving station;

(c) intermittently displacing the liquid upwardly in the other portions of the ducts by sequentially applying pressure pulses to the liquid therein so as to displace said items through the discharge openings of the respective ducts whereby the items are sequentially transported through the plant from the first receiving station to the last discharge station and fine particulate material from the items passes through the permeable barriers.

4,278,532
AIR CLASSIFICATION APPARATUS

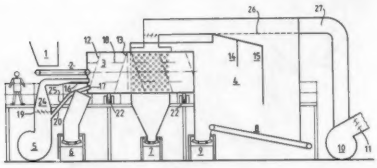
Peter R. Birch, 56 High St., Ashwell, Near Baldock, Hertfordshire, SG7 5NR; Kenneth V. Ling, 132 Swifts Green Rd., Stopsley, Luton, Bedfordshire, LU2 8BP; Claude S. Power, 16 Newnham Way, Ashwell, Near Baldock, Hertfordshire, SG7 5PN; Alan J. Robinson, "Moonrakers", Garth Rd., Letchworth; Terrence G. Mahoney, and Stanislaw F. Las-Laskowski, both of Green Dragon House, 64/70 High St., Croydon, Surrey, all of England

Filed May 23, 1979, Ser. No. 41,692

Claims priority, application United Kingdom, May 25, 1978, 22875/78

Int. Cl.³ B07B *7/00*

U.S. Cl. 209—19 **22 Claims**



1. An air classifier comprising a rotatable open-ended drum disposed with its axis substantially horizontal, for receiving material to be classified, means for creating a stream of air through the drum, means for introducing material to be classified into the drum near the upstream end thereof, means in the drum for conveying materially axially of the drum during rotation thereof, the conveying means comprising first and second helical vanes of mutually opposite hand, said first helical vane disposed in an upstream part of the drum to convey "heavies" in counter-current to the stream of air through the drum and said second helical vane disposed in a downstream part of the drum to convey "lights" in the direction of the air stream, a primary air inlet discharging air into the drum, and a secondary air inlet adjacent to the primary air inlet and disposed near the lower edge of the drum to direct air into the drum generally parallel to the upstream end portion of the first helical vane.

4,278,533
CONDITIONER FOR FLOTATION OF OXIDIZED COAL

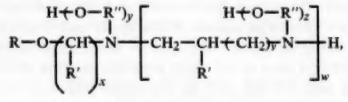
Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 7, 1980, Ser. No. 119,251

Int. Cl.³ B03D *1/02*

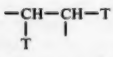
U.S. Cl. 209—166 **10 Claims**

1. A froth flotation process for beneficiaing coal of flotation size which comprises floating the sized coal in a frothing aqueous medium comprising a fuel oil collector and an effective amount of a conditioner selected from the group consisting of (1) an ether amine or hydroxyalkylated ether amine represented by the formula I:



I

wherein each R′ is independently hydrogen or methyl, each R″ is independently



wherein T at each occurrence is independently hydrogen, methyl or ethyl, with the proviso that R″ at each occurrence contains no more than 4 carbon atoms; v, w, y, and z are each independently 0 or 1; x is 2 or 3 and R is an aryl, alkaryl, alkyl, aralkyl, alkenyl or alkynyl having from 1 to about 22 carbon atoms; (2) a condensation product of a compound of formula I with an organic carboxylic acid or its ester in a molar ratio of at least about 1 mole acid or ester per mole of the ether amine or derivative; and (3) an acid derivative of the compound of formula I or its condensation product;

with the proviso that if the conditioner employed in flotation is not a condensation product of the compound of formula I or an acid derivative thereof, then in formula I, y and z are both O and R is an alkyl-substituted phenyl or an alkenyl or alkyl having at least 10 carbon atoms.

4,278,534
METHOD FOR SEPARATION OF MATERIAL MIXTURES, CONTAINING ABRASIVE PARTICLES, IN A HYDROCYCLONE SEPARATOR

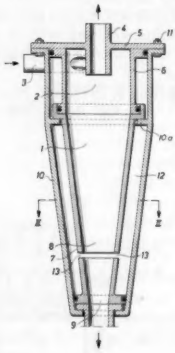
Karl F. O. Jakobson, Täby, Sweden, assignor to AB Celleco, Stockholm, Sweden

Filed Nov. 16, 1979, Ser. No. 95,064

Claims priority, application Sweden, Nov. 16, 1978, 7811825

Int. Cl.³ B04C *5/085*

U.S. Cl. 209—211 **3 Claims**

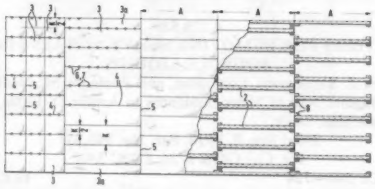


1. In the separation of an abrasive-containing mixture into two fractions by means of a hydrocyclone separator forming a separating chamber including a circular cylindrical part having a tangential inlet for said mixture and a central first outlet for one of said fractions, the separating chamber also including a conical part within a conical wall defining a second outlet for the other of said fractions, there being an outer mantle completely surrounding said conical wall and forming therewith a closed space between said wall and mantle, and method which comprises feeding said mixture through the tangential inlet into the separating chamber to effect said separation, causing said abrasive to form a hole through said conical wall, whereby said conical part of the separating chamber communicates with said closed space through said hole, allowing a mixture from said separating chamber to fill said closed spaced through said hole, and continuing to effect said separation while said hole is present in said conical wall and while said closed chamber remains filled with said mixture.

4,278,535
SCREEN DECKS

Kurt Wolff, Dinslaken, Fed. Rep. of Germany, assignor to Firma Steinhaus GmbH, Mülheim an der Ruhr, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,639
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1978, 2832747
Int. Cl.³ B07B *1/46*
U.S. Cl. 209—399 **2 Claims**



1. A screen deck having rigid support struts each having fastening holes formed therein and a plurality of rectangular flexible screen members having longitudinal and transverse edges arranged thereon the screen members abutting one another directly in order to form a continuous screen, said longitudinal edges being parallel with said support struts, the distances between adjacent pairs of the support struts being equal to the length of the transverse edge of one of the screen members, the screen members having each a surface positioned next to said rigid support struts and having at the screen member edges which complement one another in pairs at the point of abutment of adjacent screen members the projections protruding from said surface that is next to said rigid support struts and together engage in one fastening hole in each complementing pair on the sides of the support struts, adjacent to the screen member surfaces wherein the invention comprises the lengths of at least some of the longitudinal edges of the screen members being at least one and a half times the transverse screen member edge, the longitudinal support struts and rows of screen members being subdivided into abutting sections, the successive abutting sections being staggered in the transverse direction relative to each other by a distance less than the transverse screen member edge length.

4,278,536
METHOD OF STARTING AN ELECTRO-PNEUMATICALLY ACTUATED WET-SETTLING MACHINE

Karl-Heinz Weiffen, Bochum, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,465
Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823081
Int. Cl.³ B03B *5/24*
U.S. Cl. 209—422 **8 Claims**

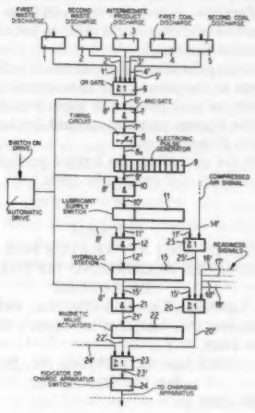
1. A method of starting an electro-pneumatically actuated wet settling machine which has electrically-controlled inlet and outlet valves, a compressed air system, a lubricating oil supply for the valves, discharge apparatus, removal apparatus, charging apparatus, a hydraulic station for the discharge apparatus, and an automatic drive control, for the separation of mineral mixtures into constituent components, in which separation takes place through the pulsation of a separating liquid in a separating chamber controlled by the introduction and exhaust of pressurized air into and from pulsation chambers which communicate with the compressed air supply by way of the inlet and outlet valves, comprising the steps of:

starting the removal apparatus which removes the individual components of the mineral mixture;

starting the lubricating oil supply for the inlet and outlet valves;

starting and operating the inlet and outlet valves in a predetermined sequence;

activating the compressed air system to cause pulsation of the separating liquid via the inlet and outlet valves;



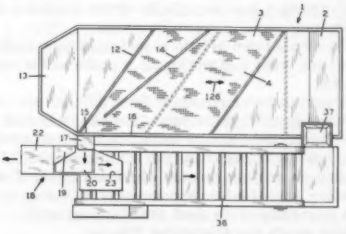
starting the hydraulic station for operating the discharge apparatus for discharging the individual components; and

starting the charging apparatus to feed the mineral mixture to be separated to the separation chamber.

4,278,537
APPARATUS FOR SEPARATING HEAVY SOLIDS AND LIGHT SOLIDS FROM A MIXTURE THEREOF

Uwe Schmidt, Stadtbergen, and Dieter Schneider, Augsburg, both of Fed. Rep. of Germany, assignors to Alpine Aktiengesellschaft, Augsberg, Fed. Rep. of Germany

Filed Mar. 27, 1979, Ser. No. 24,242
Int. Cl.³ B07B *1/36*
U.S. Cl. 209—469 **6 Claims**



1. In an apparatus for separating a mixture of heavy particulate material and light particulate material into separate fractions of heavy and light material comprising first and second separating means, said first separating means being an elongated air jig, means for vibrating the air jig, and means for discharging the clean light fraction of material from one end of said air jig, the improvement comprising:

(a) lateral discharge means for discharging the heavy fraction (which heavy fraction still contains some light material) from the air jig laterally thereof;

(b) said second separating means being positioned laterally of said air jig to receive the heavy fraction containing some light material discharged from the air jig by said lateral discharge means;

(c) said second separating means being a pneumatic table having a top plate onto which said heavy fraction is dis-

charged, said pneumatic table being capable of separating said heavy fraction into clean heavy particles and lighter particles due to the different densities;

(d) said pneumatic table being mounted to said air jig for a vibratory conveying action for conveying the heavy particles of said heavy fraction received from the air jig toward one end of said pneumatic table to provide a clean heavy particulate fraction;

(e) means for providing an air stream in a direction generally opposite to the direction of movement of the clean heavy particles on said pneumatic table which air stream conveys the lighter particles of said heavy fraction in said opposite direction; and

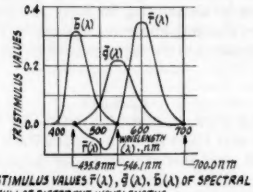
(f) means for recycling the lighter particles of said heavy fraction from said pneumatic table back to said air jig.

4,278,538

METHODS AND APPARATUS FOR SORTING WORKPIECES ACCORDING TO THEIR COLOR SIGNATURE

Hopeton S. Lawrence, Lawrenceville, N.J., and John D. Michalski, Levittown, Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 10, 1979, Ser. No. 28,773
Int. Cl.³ B07C 5/342
U.S. Cl. 209—580 **26 Claims**



TRISTIMULUS VALUES $\bar{r}(\lambda)$, $\bar{g}(\lambda)$, $\bar{b}(\lambda)$ OF SPECTRAL STIMULI OF DIFFERENT WAVELENGTHS

1. A method of sorting workpieces according to their colour, wherein positive colour determination is difficult for certain workpiece colours, comprising the steps of:

(a) advancing a workpiece to be sorted towards a workstation;

(b) directing a beam of light at said workpiece to illuminate the same while said workpiece is positioned at said workstation;

(c) measuring the amplitude of three different spectral components in the light which is diffusely reflected off said workpiece, the first and second ones of said components respectively corresponding to the first and second colours of any set of three colours which satisfy the Tristimulus Theory, said third component corresponding to at least the major lobe of the third one of said set of three colours, which satisfy the Tristimulus Theory;

(d) synthesizing an amplitude which substantially corresponds to the amplitude of the spectral component that would have been measured for the third one of said set of three colours which satisfy the Tristimulus Theory, by adding the amplitude of said third component to a moiety of the amplitude of said first component;

(e) comparing the amplitudes of said first and second spectral components, and said synthesized spectral component, to successive ones of a plurality of sets of spectral component amplitudes each set of which defines a possible colour for said workpiece, thereby to determine the colour of said workpiece when the results of the comparison indicate a match;

(f) summing the amplitudes of said first and second spectral components, and said synthesized spectral component;

(g) additionally comparing the sum of the amplitudes obtained in said summing step to the sum of the amplitudes in those ones of said plurality of sets of spectral component amplitudes of greatest interest, thereby to positively determine the colour of said workpiece when the results of said additional comparison indicate a match;

(h) moving a discharge member, in accordance with the results of steps (c) through (g) until said discharge member is aligned with the receptacle assigned to receive workpieces of said determined colour; and then,

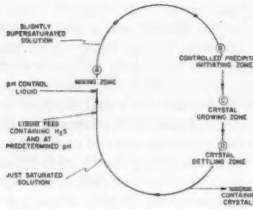
(i) releasing said workpiece from said workstation so that said workpiece traverses said discharge member and is received within said receptacle.

4,278,539

METHOD FOR REMOVING HEAVY METALS FROM AQUEOUS LIQUIDS

Chakra J. Santhanam, Lexington, and Ravindra M. Nadkarni, Arlington, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Sep. 8, 1978, Ser. No. 940,837
Int. Cl.² C02B 1/26; C02C 5/02
U.S. Cl. 210—724 **12 Claims**



1. A method for processing an aqueous feed liquid to precipitate at least one metal sulfide in a form to make said sulfide subsequently removable from said stream by settling and filtration, comprising the steps of

(a) circulating within a loop a volume of an aqueous liquid containing a soluble salt of the metal to be removed and establishing within said loop in order of liquid flow
at least one mixing zone,
a controlled precipitation initiating zone,
a crystal growing zone, and
a crystal settling zone;

(b) introducing into said loop upstream from said mixing zone aqueous feed liquid to be processed, said aqueous liquid containing H_2S, in excess of that required to react with said metal, dissolved therein and having a pH less than that at which the sulfide of said metal precipitates;

(c) introducing into said mixing zone an aqueous pH-adjusting liquid in a quantity sufficient to raise the pH of said liquid in said loop to a point between that at which said liquid becomes slightly supersaturated with respect to said metal sulfide and that at which precipitation of said metal sulfide is initiated;

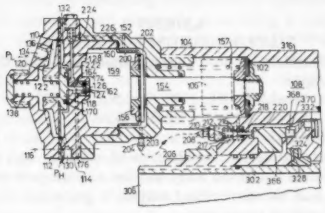
(d) maintaining the degree of supersaturation within said controlled precipitation initiating and crystal growing zones in the metastable condition whereby the growth rate of metal sulfide crystals remains greater than under uncontrolled conditions vis-a-vis the nucleation rate throughout essentially the entire precipitation of sai metal sulfide and said metal sulfide formed is of a particle size distribution which permits it to collect in said crystal settling zone and to provide aqueous liquid for recirculation in said loop; and

(e) drawing off from said loop the the metal sulfide magma formed in said crystal settling zone; the volume flow of said liquid in said loop being essentially equivalent to the product of volume flow rate of said aqueous liquid introduced into said loop and the residence time of a hypothetical volume of said liquid introduced into said loop.

4,278,540
BACK WASHING FLUID FILTERS

Mordeki Drori, 89 Zahal St., Kiron, Israel

Filed May 9, 1980, Ser. No. 148,494
Claims priority, application Israel, May 17, 1979, 57320
Int. Cl.[3] B01N *29/38*
U.S. Cl. 210—107 9 Claims

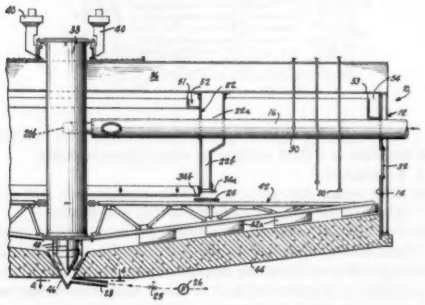


1. A backwashable filtering device including a housing having an inlet connectable to an upstream fluid pipe and an outlet connectable to a downstream fluid pipe, a filter body having an upstream surface facing the housing inlet, a backwash nozzle within the housing and having a nozzle inlet disposed adjacent to the upstream surface of the filter body, and pressure sensor means for sensing the pressure drop across the filter body and effective, upon sensing a predetermined pressure drop, to initiate a backwashing operation by connecting the backwash nozzle to the atmosphere and initiating relative rotary movement between the filter body and the backwash nozzle; characterized in that the filtering device further includes position sensor means for sensing the home angular position of the filter body with respect to the backwash nozzle, and control means effective, only when said home angular position is sensed, for terminating the backwash operation.

4,278,541
SEPARATOR EMPLOYING AN ANNULAR VERTICAL FEEDWELL WITH ASSOCIATED CONCENTRIC ANNULAR BAFFLE PLATE AND METHOD OF USING SAME TO SEPARATE SOLIDS FROM LIQUIDS

Frederick G. Eis, San Ramon; Oren V. Bonney, and Willard A. Sackett, both of Woodland, all of Calif., assignors to Amstar Corporation, New York, N.Y.

Continuation of Ser. No. 886,418, Mar. 14, 1978, abandoned.
This application Nov. 2, 1979, Ser. No. 90,638
Int. Cl.[3] B01D *21/08*
U.S. Cl. 210—112 11 Claims



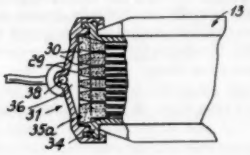
1. A clarifier or thickener apparatus useful for separating solids from a liquid feed containing solids suspended therein comprising a tank for receiving said liquid feed, said tank being provided with a top liquid outlet means and a bottom solids outlet means, influent feed conduit means for supplying said liquid feed positioned closer to the top of said tank than to the bottom of said tank, annular feedwell means in fluid communication with said influent feed conduit means to receive said liquid feed, said annular feedwell means being positioned vertically within said tank such that the bottom of said annular feedwell means is closer to the bottom of said tank than to the top thereof, said annular feedwell means being open at the bottom thereof for the discharge into said tank of said liquid feed supplied to said annular feedwell means via said influent feed conduit means, said annular feedwell means having a larger annular cross-section at the upper portion thereof than at the lower portion thereof for the flow of said liquid feed introduced thereinto, said annular feedwell means comprising an inner shell or wall and an outer shell or wall, the bottom end of said inner shell or wall being flanged radially inwardly with respect to said tank and the bottom of said outer shell being flanged radially outwardly with respect to said tank, the bottom end of said inner shell of said annular feedwell means extending below the bottom end of the outer shell of said annular feedwell means, substantially horizontal baffle means positioned substantially concentric with respect to said annular feedwell means and commensurate with respect to the projected cross-sectional area of the open bottom of said annular feedwell means, said baffle means being fixed and positioned so as to be spaced from but directly opposed with respect to the open bottom of said annular feedwell means for arresting and diverting the flow of said liquid feed leaving the bottom of said annular feedwell means so that said liquid feed upon leaving the bottom of said annular feedwell means moves radially inwardly past the bottom flanged end of the inner shell of said annular feedwell means and radially outwardly within said tank with respect to the bottom flanged end of the outer shell of said annular feedwell means, the space available for the radial outward flow from the bottom of said annular feedwell means being greater than the space available for the radial inward flow of said liquid feed, and adjustable means for controlling the opening or distance between the open bottom of said annular feedwell means and said baffle means to control the discharge of said liquid feed from the open bottom of said annular feedwell means, said adjustable means to control the discharge of said liquid feed from the open bottom of said feedwell means comprising at least one vertically slidable flanged sleeve attached to the bottom of said feedwell means.

7. Apparatus in accordance with claim 1 wherein means is provided associated within said tank for sensing the interface between a relatively dense fluid solids phase and clarified liquid phase within said tank.

4,278,542
METHOD FOR MANUFACTURING MULTI-LAYER HEMODIALYZERS AND IMPROVED MULTI-LAYER HEMODIALYZER OBTAINED THEREBY

Theophiel Beulens, Heverlee, Belgium, assignor to Medical Development S.A., Luxembourg, Luxembourg

Filed Dec. 11, 1978, Ser. No. 967,895
Int. Cl.[3] B01D *31/00*
U.S. Cl. 210—321.3 17 Claims



1. In a method for manufacturing multi-layer hemodialyzers having flattened tubular membranes arranged in parallel and separated by foil-like supporting members, which comprises the steps of

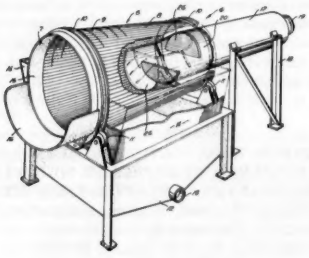
(i) forming at least one pack comprising alternate layers of said membranes and said supporting members, wherein the open ends of said membranes are arranged at two opposed sides of said pack;
(ii) inserting said pack into a box-like enclosure to form a dialyzer assembly, said enclosure being open at its sides whereat said open ends of the membrane are arranged; and
(iii) securing, at the open sides of said enclosure, closing members defining manifold spaces in communication with spaces between said membranes; the improvement which comprises, before step (iii), the steps of:
(iv) positioning in said open ends of the membranes inserts projecting outwardly from said pack and extending into the interior of the tubular membranes;
(v) sealing the open ends of said membranes and the end spaces between said membranes and said supporting members in the dialyzer assembly by:
(a) removably closing the open ends of said dialyzer assembly comprising said inserts,
(b) placing the inside of said enclosure into communication with at least one container of fluid state resin, and subjecting said dialyzer assembly and said container to a centrifugal force so as to distribute said resin to the ends of said dialyzer assembly containing said inserts, and
(c) allowing said resin to set so as to obtain end blocks as means for sealing said open ends and said end spaces, said inserts providing means for defining communications orifices through the set-resin end blocks into the interior of the tubular membranes.

4,278,543

ROTARY SIEVE FOR SEPARATION OF SOLIDS FROM LIQUIDS

Dux C. L. Maniquis, Sydney, Australia, assignor to Alchaldean International Pty. Limited, Blakehurst, Australia

Filed Mar. 5, 1980, Ser. No. 127,420
Claims priority, application Australia, Mar. 5, 1979, PD7888
Int. Cl.[3] B01D *33/06*
U.S. Cl. 210—403 **2 Claims**



1. A sieve of the kind comprising:
an open-ended wedge-wire sleeve having a receiving end and a solids departure end, and having its longitudinal axis disposed substantially horizontally, means to rotate said sleeve about that axis, and means for infeed of material to be sieved into the sleeve by way of said receiving end; said infeed means comprising:
a trunk disposed co-axially with the sleeve, having one end outside the sleeve through which material to be sieved is delivered into said trunk and an opposite end portion which projects into and through the receiving end of the sleeve to extend within the sleeve over a distance equal to from one quarter to one half the axial length of the sleeve, and a material departure aperture in the top of said end portion bordered by a horizontal weir extending axially of said end portion for a distance at least half the axial length of that portion measured from the innermost end of said portion; said end portion being internally furnished with at least one upstream anti-surge baffle plate which extends laterally of said end portion and from the top of that portion towards the center thereof, and at least one downstream anti-surge baffle plate which extends laterally of said end portion and from the bottom of that portion towards the center thereof.

4,278,544

FILTER MEDIUM FOR FLUID

Masaru Takashima, Komae, Japan, assignor to Aikoh, Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1980, Ser. No. 134,263
Int. Cl.[3] B01D *39/20*
U.S. Cl. 210—503 **1 Claim**

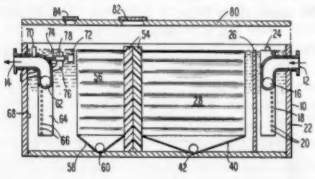
1. A filter medium for the filtration of a fluid at high temperatures which is a sintered body and has a mean pore diameter in the range of 500 microns to 1 mm and a porosity in the range of 15–40% which comprises:
(a) 100 parts by weight of an alumina refractory, with more than 95% by weight of said refractory being pelletized spheroids having a particle size of less than 1.0 mm, said refractory being at least one material selected from the group consisting of alumina, corundum, mullite, bauxite, diaspore and sillimanite;
(b) 15–30 parts by weight of an organic binder having a particle size less than 40 microns, with said binder being at least one material selected from the group consisting of kaolinite, bentonite, agalmatolite, burned alumina, sintered alumina, siliceous stone, feldspar, porcelian stone and glass; and (c) 0.1–1.0 parts by weight of a sintering aid wherein said sintering aid is at least one material selected from the group consisting of lithium fluoride and lithium oxide.

4,278,545

APPARATUS FOR SEPARATING SOLIDS AND LIQUID COMPONENTS

Edward F. Batutis, Phoenixville; Edward Rodriguez, Bensalem, and Walter R. Kugler, Norristown, all of Pa., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 12, 1979, Ser. No. 74,832
Int. Cl.[3] B01D *21/00*
U.S. Cl. 210—521 **10 Claims**



1. Apparatus for separating solids and components of different densities in a fluid mixture or emulsion comprising:
a. a container;
b. inlet means for introducing said mixture into said container to minimize turbulence within said container;
c. first discharge means for removing a more dense component at a level below the level of a less dense component;
d. a plurality of vertically disposed spaced plates positioned within said container and between said inlet means and said first discharge means, said plates having approximately sinusoidal corrugations in a cross-sectional plane transverse to the direction of fluid flow, each of said plates, and the corrugations therein, extending parallel to the direction of fluid flow and cooperating with at least one adjacent plate to define a vertically extending flowpath between the inlet and the first discharge means, said

corrugations forming alternately constricting and expanding passages;

e. second discharge means for removing the less dense component at a level above the level of the more dense component; and

f. means, positioned beneath and in juxtaposition with said plates, for collecting and then removing said solids.

5. Apparatus for separating components of different densities in a fluid mixture, said apparatus comprising a container, an inlet for introducing said mixture into said container, first discharge means for removing the more dense component of said fluid mixture at a level below the level of said less dense component, a plurality of plates in said container, each of said plates extending vertically from a point adjacent the upper surface of said fluid mixture toward the bottom surface of said fluid mixture and also extending generally in the direction of fluid flow between the inlet and first discharge means to define vertically extending fluid flow paths between said plates between the inlet and the first discharge means, said plates having corrugations extending parallel to the direction of fluid flow such that the distance between each of said plates and a corresponding adjacent plate varies along the surface of the plate between the upper surface of said fluid mixture to the bottom surface thereof so that the width of the fluid flow paths varies at different horizontal cross sectional planes taken through said plates, and second discharge means for removing the less dense component at a level above the level of the more dense component.

4,278,546

TREATMENT OF A LIQUID BY CIRCULATION AND GAS CONTACTING

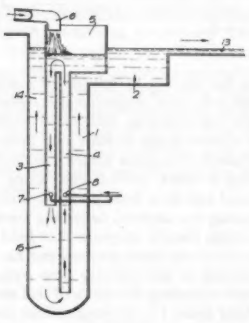
Frank C. Roesler, deceased, late of Stockton-on-Tees, England (by Johanna Roesler, executrix), assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 733,410, Oct. 18, 1976, abandoned. This application Jan. 16, 1978, Ser. No. 870,040

Claims priority, application United Kingdom, Oct. 22, 1975, 43362/75; Apr. 7, 1976, 14098/76

Int. Cl.³ C02F *3/22*

U.S. Cl. 210—626 **10 Claims**



1. A process for the treatment of wastewater containing biologically degradable material, utilizing a main treatment chamber, a downflow pipe, and an upflow pipe; said downflow and upflow pipes being disposed within the main treatment chamber and in communication with the interior of the main treatment chamber at the lower ends thereof, and being in communication with each other at the upper ends thereof in a basin from which gas may escape; the lower end of the upflow pipe communicating with the chamber at a lower level than does the lower end of the downflow pipe; an upper region of the chamber being above the level at which the lower end of the downflow pipe communicates with the chamber, and a lower region of the chamber being below this level; said process comprising the steps of

continuously introducing wastewater into the chamber;

producing different types of flow in the upper and lower regions by continuously recirculating wastewater along a circulatory path within the chamber, including downwardly in the downflow pipe into and through the lower region and upwardly in the upflow pipe; continuously introducing gas into the wastewater so that the wastewater in the circulatory path makes contact with gas during circulation thereof, the wastewater continuous circulation and gas continuous introduction steps being accomplished by introducing gas-upwardly into the upflow pipe, all the wastewater in the upflow pipe flowing into the basin where gas is allowed to escape, and from the basin all the wastewater flowing into the downflow pipe, -and while it is flowing downwardly in the main treatment chamber; and by controlling the circulation rate of the wastewater and gas so that the downward velocity of wastewater in the lower region effects an automatic division of gas bubbles therein, some escaping upwardly to the upper region, and others being carried downwardly into the lower region; and

continuously removing wastewater after sufficient treatment of the biologically degradable material therein.

7. Apparatus for the treatment of wastewater containing biologically degradable material, comprising

a main treatment chamber,

a generally vertically extending downflow pipe,

a generally vertically extending upflow pipe,

a basin from which gas may escape,

said downflow and upflow pipes being disposed within the main treatment chamber and in communication with the interior of the main treatment chamber at the lower ends thereof, and in communication with each other at the upper ends thereof in the basin,

the lower end of said upflow pipe communicating with the chamber at a lower level than the lower end of said upflow pipe,

means for recirculating wastewater along a circulatory path within said chamber, including up the upflow pipe and down the downflow pipe,

means for introducing gas into the wastewater by introducing gas upwardly in the upflow pipe, and so that wastewater in the circulatory path makes contact with gas during circulation thereof, all the wastewater in the upflow pipe flowing into the basin where gas is allowed to escape, and all the wastewater flowing into the downflow pipe,

means for controlling the circulation rate of the wastewater and gas, and

means for continuously removing wastewater from said chamber after sufficient treatment of the biologically degradable material therein.

4,278,547

CONSERVATION OF MOMENTUM IN A BARRIER OXIDATION DITCH

John H. Reid, 7 Stansbury Ct., Fredericksburg, Va. 22401

Continuation-in-part of Ser. No. 848,705, Nov. 4, 1977, which is a continuation-in-part of Ser. No. 649,995, Jan. 19, 1976, abandoned. This application Apr. 9, 1979, Ser. No. 28,383

Int. Cl.³ C02C *1/17*

U.S. Cl. 210—629 **9 Claims**

1. The process of providing point-source aeration to a continuously circulating mixed liquor, disposed within the endless channel of an oxidation ditch, which:

(a) is at a concentration of at least 1,000 mg/l of mixed liquor suspended solids,

(b) is admixed with and diluted by a continuously inflowing stream of wastewater at a volume ratio of at least 100:1 of mixed liquor:wastewater,

(c) contains a biomass including heterotrophic aerobic, heterotrophic facultative, and autotrophic microorganisms

which are agglomerated at least partially as a bacterial floc and for which said wastewater is a food source at a food-to-microorganism ratio by weight varying over a range of 0.01 to 2.5 parts of five-day biochemical oxygen demand per part of mixed liquor suspended solids,

(d) flows translationally within said endless channel at a circulation velocity that is sufficient to maintain said floc in a state of suspension therewithin without interruption by a clarification zone within said channel,

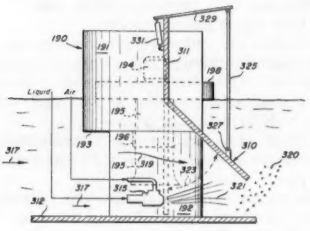
(e) is diminished by a portion thereof being continuously discharged to a settling means for separating mixed liquor into purified liquid waste and settled sludge, and

(f) is increased by at least a part of said settled sludge being continuously returned to said endless channel for dispersion within said mixed liquor,

said process comprising the operation of said oxidation ditch, which comprises an intake channel, a discharge channel, and a discharge passage therebetween, according to the following steps:

A. selectively forcing up to all of said mixed liquor, once per circuit-flow cycle thereof, to enter said discharge passage connecting upstream liquor within said intake channel to downstream liquor within said discharge channel;

B. pumping said mixed liquor entering said discharge passage:



(1) past an aeration means for dispersing air into said mixed liquor to form freshly aerated mixed liquor, said aeration means being disposed at substantially a single location within said channel, and

(2) at an adequate circulation rate within said discharge passage for generating sufficient hydraulic head to move all of said mixed liquor through the entire length of said endless channel at said sufficient circulation velocity;

C. at least substantially preventing back-mixing of said freshly aerated mixed liquor from said discharge channel to said intake channel;

D. increasing the log mean driving force across the intake and discharge ends of said discharge passage, thereby decreasing the energy required for dissolving a given quantity of oxygen in said mixed liquor and increasing the oxygen transfer efficiency for providing repetitive aerobic treatment to said mixed liquor; and

E. selectively conserving up to a substantial portion of the momentum in said continuously circulating mixed liquor,

a barriered pump assembly being disposed between said intake channel and said discharge channel and being sealably attached to the bottom and sides of said endless channel, and said barriered pump assembly being a mixing-control apparatus which comprises an adjustably apertured barrier assembly having a plurality of gateways.

4,278,548

CONTROL OF BIOLOGICAL GROWTH IN REVERSE OSMOSIS PERMEATORS

George E. Bettinger; Hermann W. Pohland, and Lynn E. Applegate, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 20, 1979, Ser. No. 68,079
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—636 **6 Claims**

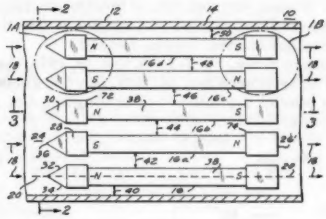
1. In the process for continuously purifying a liquid process stream by passing it through at least one reverse osmosis module comprising a core member having a semipermeable polyamide membrane positioned in a manner whereby the liquid permeates through the membrane producing flows of permeate and concentrate, the improvement which comprises inhibiting the growth of microorganisms in said liquid process stream and on the membrane by repeatedly introducing into the process stream prior to its entering the reverse osmosis module about from 5 to 25 parts per million, based on the total volume of the process stream, of an uncombined additive selected from the group consisting of iodine, hydrogen peroxide, sodium persulfate, ammonium persulfate and sodium perborate for a period of about from 30 minutes to 3 hours per 72 hours of operation, without interruption of the process stream.

4,278,549

MAGNETIC CONDITIONING OF LIQUIDS

Joseph L. Abrams, 960 Apple La., and Arthur D. Maynard, 624 Riverview Ave., both of Altamonte Springs, Fla. 32701

Filed Nov. 19, 1979, Ser. No. 95,625
Int. Cl.³ C02F *1/48*
U.S. Cl. 210—695 **7 Claims**



1. A method for treating an aqueous or non-aqueous liquid stream to enhance its flow properties and reduce its tendency to deposit scales, encrustations, sludge and the like, comprising directing said stream along at least one primary flow path defined by adjacent permanent magnets arranged in parallel, each comprising a shank portion connecting longitudinally opposed proximal and distal head portions, said proximal head portion terminating in a tapered, deflecting portion, to contact and traverse a high density magnetic flux field generated between juxtaposed of said head portions and having a flux axis substantially normal to said primary flow path, the width of said head portion exceeding the width of said shank portion by a factor of at least about 1.2, the longitudinal dimension of the magnets being at least about 4 times the lateral dimension, to deflect said stream immediately prior to or substantially simultaneously with its contacting said flux field by said tapered portion along secondary flow paths causing said stream to contact and traverse said flux field at an angle of from about 20° to 60° with respect to said flux axis.

4. Apparatus for magnetically treating an aqueous or nonaqueous liquid stream to enhance its flow properties and to reduce its tendency to deposit scales, encrustation and the like comprising an enclosure, means for admitting a liquid stream to said enclosure, means for directing said stream along at least one primary flow path comprising adjacent permanent magnets arranged in parallel defining a flow path therebetween, the longitudinal dimension of the magnets being at least 4 times the

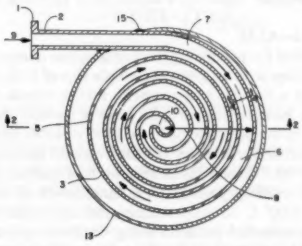
lateral dimension, each of said magnets comprising a shank portion connecting longitudinally opposed proximal and distal head portions, said proximal head portion terminating in a tapered, deflecting portion, juxtaposed of said head portions generating a high density magnetic flux field therebetween having a flux axis normal to said primary flow path, the ratio of the width of the flow path between juxtaposed of said head portions to the width of the remainder of said primary flow path between juxtaposed of said shank portions being less than about 1:1.2, said tapered portion comprising means for deflecting said stream through said flux field at an angle of from about 20° to 60° with respect to said flux axis.

4,278,550

FLUID SEPARATOR

John D. Watts, P.O. Box 79466, Houston, Tex. 77079

Filed Dec. 14, 1979, Ser. No. 103,693
Int. Cl.³ B04C *1/00, 11/00*
U.S. Cl. 210—741 **12 Claims**



1. A method of separating a first fluid from a pressurized mixture with a second fluid, said second fluid having a greater density than said first fluid, comprising: causing substantially all of said first fluid to travel a stationary first path of increasing centrifugal force through a zone of maximum centrifugal force; the first path comprising a confined, arcuate route of more than one revolution and having a decreasing radius in the direction of flow; the centrifugal force being sufficient to cause said second fluid to separate from said first fluid; causing the first fluid to exit the first path downstream from the zone of maximum centrifugal force; adjusting fluid flow along said first path responsive to pressure in said first path; adjusting said second fluid flow along said second path responsive to fluid level in said second path.

4,278,551

WOUND CARTRIDGE FILTERS

Kenneth C. Hou, Glastonbury, and Michael F. Kilty, Windsor Locks, both of Conn., assignors to AMF Incorporated, White Plains, N.Y.

Filed Jul. 30, 1979, Ser. No. 62,219
Int. Cl.³ B01D *27/00*
U.S. Cl. 210—767 **10 Claims**

10. A method for the filtration of liquid at high flow rates and improved efficiency comprising passing said liquids through a porous wound cartridge filter comprising a tubular element defined by superposed windings of a continuous yarn bundle, the surfaces of which are modified with cationic colloidal silica.

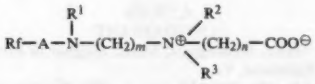
4,278,552

FLUORINE-CONTAINING BETAINE COMPOUNDS, AND PRODUCTION AND USE THEREOF

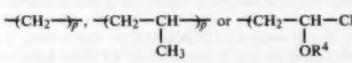
Iwao Hisamoto; Naonori Enjo, both of Osaka; Chiaki Maeda; Takasige Esaka, both of Kyoto; Yukio Omure; Toshihiko Iida, both of Osaka, and Hideki Aomi, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Apr. 12, 1979, Ser. No. 29,573
Claims priority, application Japan, Apr. 13, 1978, 53-44082
Int. Cl.³ A62C *1/12;* A62D *1/04;* C07C *101/24*
U.S. Cl. 252—3 **4 Claims**

1. A fluorine-containing betaine compound of the formula:

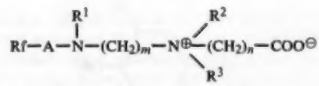


wherein Rf is polyfluoroalkyl group having 3 to 21 carbon atoms, A is a group of the formula:

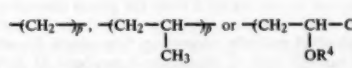


(wherein R^4 is a hydrogen atom or an acyl group having 2 or 3 carbon atoms and p is an integer of 1 to 5), R^1 is a hydrogen atom, an alkyl group having 1 to 20 carbon atoms or a group of the formula: Rf—A—, R^2 and R^3 are each a hydrogen atom, an alkyl group having 1 to 3 carbon atoms or a hydroxyalkyl group having 1 to 3 carbon atoms, m is an integer of 2 to 6 and n is an integer of 1 to 4.

4. A foam fire-extinguishing composition for polar organic liquids which comprises an aqueous solution of a partially hydrolyzed protein and, as an additive contained therein, 0.1 to 30% by weight based on the original liquid of the protein solution of a fluorine-containing betaine compound of the formula:



wherein Rf is a polyfluoroalkyl group having 3 to 21 carbon atoms, A is a group of the formula:



(wherein R^4 is a hydrogen atom or an acyl group having 2 or 3 carbon atoms and p is an integer of 1 to 5), R^1 is a hydrogen atom, an alkyl group having 1 to 20 carbon atoms or a group of the formula: Rf—A—, R^2 and R^3 are each a hydrogen atom, an alkyl group having 1 to 3 carbon atoms or a hydroxyalkyl group having 1 to 3 carbon atoms, m is an integer of 2 to 6 and n is an integer of 1 to 4.

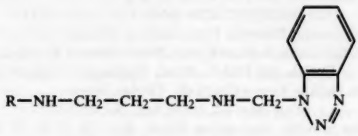
4,278,553

DIESEL LUBRICANT CONTAINING BENZOTRIAZOLE DERIVATIVES

Rodney L. Sung, Fishkill, and Benjamin H. Zoleski, Beacon, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 4, 1980, Ser. No. 109,702
Int. Cl.³ C10M *1/32*
U.S. Cl. 252—50 **5 Claims**

1. A diesel lubricant composition comprising a diesel lubricating oil and a silver corrosion-inhibiting amount of a compound of the formula:



wherein R is straight chain alkyl having from 21 to 18 carbon atoms in the chain.

4,278,554

ANTIOXIDANT

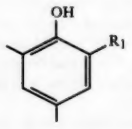
Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 966,028, Dec. 4, 1978, Pat. No. 4,222,884. This application Apr. 18, 1980, Ser. No. 141,305

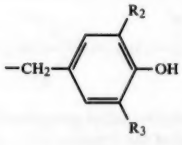
Int. Cl.³ C10M *1/24, 1/20, 3/18, 3/14*

U.S. Cl. 252—52 R **13 Claims**

1. Organic material normally subject to gradual degradation in the presence of oxygen containing an antioxidant amount of a normally liquid antioxidant composition comprising a mixture of compounds having a central segment made up of one to about ten divalent groups having the structure:



said divalent groups, when there are more than one, being bonded to each other through a $—CH_2—$ group, said central segment having a terminal group bonded at each end, said terminal group having the structure:



wherein R_1 and R_2 are selected from the group consisting of α-branched alkyl radicals containing 3 to about 12 carbon atoms, cycloalkyl radicals containing 5 to about 8 carbon atoms and aralkyl radicals containing 8 to about 12 carbon atoms and R_3 is selected from the group consisting of alkyl radicals containing 1 to about 12 carbon atoms, cycloalkyl radicals containing 5 to about 8 carbon atoms and aralkyl radicals containing 8 to about 12 carbon atoms.

4,278,555

LUBRICANT COMPOSITION

Edward F. Zaweski, Pleasant Ridge, Mich., and Christian S. Harstick, Crestwood, Mo., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 960,763, Nov. 15, 1978, abandoned. This application Dec. 20, 1979, Ser. No. 105,725

Int. Cl.³ C10M *1/20*

U.S. Cl. 252—52 A **12 Claims**

1. A lubricating oil composition comprising a major amount of lubricating oil and a minor corrosion inhibiting amount of the combination of

(A) an oxyalkylated trimethylol alkane having a molecular weight of about 1,000–8,000 in which an initial hydrophobic oxyalkylene block is bonded to trimethylol alkane and a terminal hydrophilic oxyalkylene block is bonded to the other end of said hydrophobic block, said hydrophobic block consisting essentially of propyleneoxy units and optionally containing from 0 to 41 mole percent random ethyleneoxy units in an amount such that the average oxygen-to-carbon atom ratio in said hydrophobic block does not exceed 0.4, said hydrophilic block consisting essentially of ethyleneoxy units and at least 4 mole percent random propyleneoxy units such that the oxygen-to-carbon atom ratio in said hydrophilic block is in excess of 0.4, said hydrophilic block forming 5–90 weight percent of said oxyalkylated trimethylol alkane,

(B) an ethoxylated C_{4-12} alkylphenol containing an average of about 2–10 ethyleneoxy units, and

(C) an overbased metal detergent selected from the group consisting of alkaline earth metal alkylbenzene sulfonates, petroleum sulfonates, phenates, sulfurized phenates and salicylates.

4,278,556

PROCESS FOR PRODUCING FLEXIBLE MAGNETS

Takeo Tada, Urawa, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed May 17, 1979, Ser. No. 40,148

Claims priority, application Japan, May 19, 1978, 53-058877

Int. Cl.³ H01F *1/117*

U.S. Cl. 252—62.54 **3 Claims**

1. A method for producing flexible magnets comprising hard ferrite particles with an average particle size of from 1 to 1.75μ dispersed in a flexible non-magnetic matrix which comprises pulverizing hard ferrite particles have a particle size greater than 1.75μ in the presence of from 0.1% to 10%, based on the weight of ferrite particles, of at least 1 alkanol having a boiling point up to 100° C. and containing up to 4 carbon atoms, annealing the resulting particles at a temperature of from about 900° C. to 1000° C. to relax stresses and crystalline distortion therein; the annealed particles being nonfused and dispersing the annealed particles in a flexible non-magnetic matrix.

4,278,557

SOLVENT MIXTURE FOR DISSOLVING AND REMOVING EPOXY RESINOUS COMPOUNDS

John L. Elwell, Jr., Hooper, Utah, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 15, 1980, Ser. No. 140,640

Int. Cl.³ C11D *7/52*

U.S. Cl. 252—171 **2 Claims**

1. A solvent solution for effectively removing epoxy resinous formulations from a substrate, said solution consisting essentially of a mixture of about 45 volume percent methanol, about 40 volume percent dichloromethane and about 15 volume percent distilled water.

4,278,558

QUICK CURE CATALYST FOR POLYESTER MOLDING COMPOSITIONS

Donald C. Smith, and Jack D. Hoffman, Both of Ft. Wayne, Ind., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Jul. 10, 1979, Ser. No. 56,051

Int. Cl.³ C08K *5/14;* **C08J** *3/24*

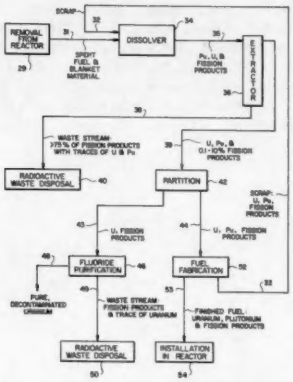
U.S. Cl. 252—186 **12 Claims**

1. A catalyst for curing unsaturated polyester resins, said catalyst comprising a mixture consisting essentially of about 20 to 40% by weight of 2,5-dimethylhexane-2,5-diperoxybenzoate, about 10 to 25% by weight of tert-butyl peroxy (2-ethyl hexanoate), and about 40 to 65% by weight of tert-butylperoxy isopropyl carbonate.

4,278,559
METHOD FOR PROCESSING SPENT NUCLEAR REACTOR FUEL

Milton Levenson, Menlo Park, and Edwin L. Zebroski, Los Altos, both of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Feb. 16, 1978, Ser. No. 878,392
Int. Cl.³ C09K 3/00; C01G 43/00, 56/00
U.S. Cl. 252—301.1 R **13 Claims**


SCRAP
REMOVAL FROM REACTOR
SPENT FUEL & BLANKET MATERIAL
DISSOLVER
Pu, U, & FISSION PRODUCTS
WASTE STREAM: >75 % OF FISSION PRODUCTS WITH TRACES OF U & Pu
U, Pu, & 01-10% FISSION PRODUCTS
RADIOACTIVE WASTE DISPOSAL
PARTITION
SCRAP: U, Pu, FISSION PRODUCTS
U FISSION PRODUCTS
U, Pu, FISSION PRODUCTS
FLUORIDE PURIFICATION
FUEL FABRICATION
PURE, DECONTAMINATED URANIUM
WASTE STREAM FISSION PRODUCTS & TRACE OF URANIUM
FINISHED FUEL: URANIUM, PLUTONIUM & FISSION PRODUCTS
RADIOACTIVE WASTE DISPOSAL
INSTALLATION IN REACTOR

1. A method for processing spent nuclear reactor fuel, comprising the steps of:

(a) dissolving spent nuclear reactor fuel into a spent fuel stream, said stream containing plutonium, uranium, and short-lived and long-lived radioactive fission products in an aqueous solution;

(b) extracting from the spent fuel stream plutonium and uranium together with a substantial quantity of long-lived fission products and discharging them together in an organic product stream; and

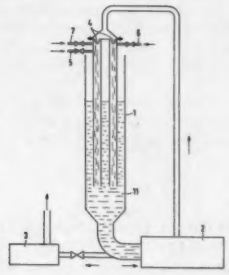
(c) partitioning the product stream into a uranium product stream and a fuel fabrication stream containing plutonium, uranium and long-lived fission products in an aqueous solution, the quantity of uranium in the fuel fabrication stream being equal to or greater than the quantity of plutonium therein.

4,278,560
METHOD FOR MANUFACTURING GADOLINIUM-CONTAINING NUCLEAR FUELS

Thomas Sondermann, Kahl, Fed. Rep. of Germany, assignor to RBU, Reaktor-Brennelment Union GmbH, Hanau, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,529
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1978, 2853599
Int. Cl.³ G21C 3/62
U.S. Cl. 252—301.1 R **8 Claims**

1. Method for manufacturing mixed crystals containing uranium and gadolinium for conversion into nuclear fuels, which comprises maintaining a body of an aqueous solution of ammonium carbonate at a pH of 9, introducing NH_3, CO_2 and a uranyl salt solution containing gadolinium in dissolved form, said uranyl salt being selected from the group consisting of uranyl nitrate and uranyl sulfate, into the aqueous solution of ammonium carbonate to precipitate ammonium salts of gadolinium and uranium complexes and during precipitation lowering the pH of the body of aqueous solution down to 8.2, separating the precipitate from the body of solution, and converting the precipitate of complexes containing gadolinium and uranium to uranium and gadolinium oxides.

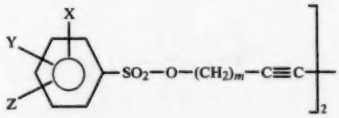


4,278,561
FLUORINATED BENZENESULFONATE DIACETYLENES

Kwok C. Yee, Randolph, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Sep. 13, 1978, Ser. No. 942,089
Int. Cl.³ C09K 3/00
U.S. Cl. 252—408 **12 Claims**

1. A composition of the following formula:



wherein m is an integer value from 1 to 4 and X, Y and Z are selected from hydrogen, fluoro and C_1–C_4 fluorinated normal, iso- or secondary alkyl, containing 1–9 fluorine atoms, said composition being symmetrical and containing at least two fluorine atoms and being capable of undergoing solid state polymerization upon thermal annealing or exposure to actinic radiation or high energy ionizing radiation.

4,278,562
MANUFACTURE OF AN ETHYLENE OXIDE CATALYST

Wolf D. Mross; Eckart Titzenthaler, both of Ludwigshafen; Juergen Koopmann, Neustadt; Matthias Schwarzmann, and Volker Vogt, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,684
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1977, 2751767; May 11, 1978, 2820520
Int. Cl.³ B01J 31/02, 23/50, 23/96; C07D 303/04
U.S. Cl. 252—430 **2 Claims**

1. A process for the preparation of a catalyst on a carrier for the manufacture of ethylene oxide by reaction of ethylene with oxygen in the gas phase, which catalyst contains from about 2 to 12% of elementary silver and alkali metals or their compounds, comprising:

applying at least one of the alkali metals potassium, rubidium or cesium to the catalyst carrier by treating the catalyst which already contains silver in the reduced form, with or without sodium and/or lithium, with a solution of a compound of potassium, rubidium and/or cesium which contains 0.1 to 10% by volume of a diketone which forms

complex salts, via an oxygen atom with silver-(I) ions, and using the solution in such amount that the solution absorbed by the catalyst corresponds to (based on silver) from 0.05 to 0.35 atom percent of potassium, from 0.003 to 0.25 atom percent of rubidium or from 0.0005 to 0.2 atom percent of cesium or to a corresponding amount of a mixture of these alkali metals, taking due account to any amounts of alkali metals which may already be present on the catalyst.

2. The process as set forth in claim 1, wherein a diketone selected from the group consisting of diacetyl, ethyl acetoacetate, and acetylacetone is used as the compound which forms complex salts.

4,278,563

COPPER CHLORIDE CONTAINING CATALYSTS FOR THE PREPARATION OF FURAN COMPOUNDS

Joseph M. Fremont, Glen Mills, Pa., and Donald I. Garnett, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 29,101, Apr. 10, 1979, abandoned. This application Jan. 18, 1980, Ser. No. 109,263

Int. Cl.[3] **B01J** *27/10, 27/08;* **C07D** *307/36*

U.S. Cl. 252—441 **6 Claims**

1. A catalyst consisting essentially of a support having deposited thereon

(a) 0.5–30%, by weight of the support, of a mixture of cuprous chloride and cupric chloride,

(b) 0.5–10%, by weight of the support, of an alkali metal chloride, and

(c) at least one of

(1) 0.01–2%, by weight of the support, of palladium chloride, and

(2) 0.1–2%, by weight of the support, of an iodide compound.

4. The catalyst of claim 1 in which the alkali metal chloride is of a divalent alkali metal.

5. The catalyst of claim 4 in which the alkali metal chloride is calcium chloride.

4,278,564

METHOD FOR MODIFYING THE SHAPE SELECTIVITY OF FERRIERITE

Bruce P. Pelrine, Trenton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 30, 1979, Ser. No. 89,691

Int. Cl.[3] **B01J** *29/06*

U.S. Cl. 252—450 **5 Claims**

1. A method for modifying the shape selectivity of natural ferrierite which comprises first contacting said ferrierite with oxalic acid and then contacting the resultant oxalic acid treated-ferrierite with an aqueous diammonium oxalate solution.

4,278,565

HYDROCARBON MANUFACTURE FROM ALCOHOLS

Nai Y. Chen, Titusville, and William J. Reagan, Englishtown, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 20,160, Mar. 14, 1979, abandoned, which is a division of Ser. No. 896,267, Apr. 14, 1978, Pat. No. 4,148,835. This application May 23, 1980, Ser. No. 152,878

Int. Cl.[3] **B01J** *29/28*

U.S. Cl. 252—455 Z **16 Claims**

1. A crystalline aluminosilicate zeolite catalyst having a crystal size of at least about 1 micron, a silica-to-alumina ratio of at least about 12 and a constraint index of about 1 to about 12, said zeolite comprising a Group 2B component, a Group 8 component and magnesium that have been incorporated into said zeolite in that order.

2. The catalyst of claim 1 wherein the Group 2B metal is zinc and the Group 8 metal is palladium.

11. A method for making a crystalline aluminosilicate zeolite catalyst having a crystal size of at least about 1 micron, a silica-to-alumina ratio of at least about 12 and a constraint index of about 1 to about 12, the step of incorporating into said zeolite catalyst a member comprising a Group 2B component, a Group 8 component and magnesium, said member having been incorporated in the order stated.

4,278,566

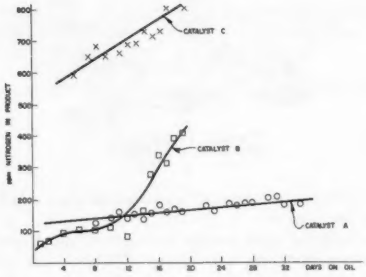
HYDROTREATING PROCESS

Albert L. Hensley, Jr., Munster, Ind.; Leonard M. Quick, Naperville, and P. Donald Hopkins, St. Charles, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 21,575, Mar. 19, 1979, Pat. No. 4,224,144. This application Apr. 11, 1980, Ser. No. 139,231

Int. Cl.[3] **C10G** *45/08, 45/38*

U.S. Cl. 252—465 **6 Claims**



1. A catalyst comprising a porous refractory inorganic oxide and deposited thereon hydrogenation components comprising chromium, molybdenum and at least one Group VIII metal, said catalyst having a pore volume distribution comprising 20–50% of pore volume in pores with diameters of 0–50 Angstrom units, 30–70% of pore volume in pores with diameters of 50–100 Angstrom units, 0–20% of pore volume in pores with diameters of 100–150 Angstrom units, and 0–10% of pore volume in pores with diameters greater than 150 Angstrom units.

4,278,567

PROCESS FOR PREPARATION OF COPPER-IRON-ALUMINUM HYDROGENATION CATALYST

Bunji Miya, deceased, late of Wakayama, Japan (by Kazu Miya, heir); by Fumiaki Miya, heir, Tokyo, Japan, and by Yukiko Nawashiro, heir, Ishikawa, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 128,985

Claims priority, application Japan, Mar. 30, 1979, 54-377741

Int. Cl.[3] **B01J** *21/04, 23/72, 23/74*

U.S. Cl. 252—466 J **5 Claims**

1. A process for the preparation of a copper-iron-aluminum hydrogenation catalyst, which comprises the steps of: dissolving a cupric salt, a ferrous salt and an aluminum salt in water so that the Cu/Fe/Al atomic ratio is 1/(0.4–2.5)/(0.1–3.0), dissolving urea in the resulting aqueous solution in such an amount that the mole number of urea is at least 0.7 time as large as the sum of the equivalents of the metal ions of said salts, heating said aqueous solution until the pH of the liquid is 4.6 to 7.5, adding an alkali to the reaction liquid to elevate the pH to 9.5 to 11.5, further conducting the reaction and then

separating, water-washing, drying and calcining the formed precipitate.

4,278,568

PROCESS OF MANUFACTURING SHEET METAL ELEMENTS OR STRIP HAVING A CATALYTIC SURFACE STRUCTURE

Karl Lohrberg, Heusenstamm; Heinz Wüllenweber, Frankfurt am Main; Jürgen Müller, Karben, and Bernd Sermond, Aslar, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 50,018

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829901

Int. Cl.[3] **B01J** *25/00, 25/02, 35/02*

U.S. Cl. 252—472 **11 Claims**

1. In a process for manufacturing a sheet metal element or strip having a catalytic surface structure wherein a mixture comprising a skeleton powder and Raney alloy powder in a ratio of 1:3 to 3:1 is applied to a sheet or strip, bonded thereto by a roll of cladding, sintered in a reducing atmosphere at a temperature above 600° C. and treated with an alkaline or acid solution to dissolve out the soluble component of the Raney alloy the improvement wherein said sheet metal element or strip is cold-formed during said process with a deformation of 20 to 60% in any one forming step.

4,278,569

2,2,3-TRIMETHYL-3-CYCLOPENTEN-1-YLALKYL, ALKENYL AND ALKYLIDENE, CYCLOHEXANOLS, ORGANO-LEPTIC USES THEREOF IN PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES

Takao Yoshida, West Long Branch; Braja D. Mookherjee, Holmdel; Venkatesh Kamath, Red Bank; John B. Hall, Rumson, all of N.J.; William I. Taylor, Hertfordshire, England, and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

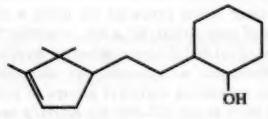
Continuation-in-part of Ser. No. 23,322, Mar. 22, 1979, Pat. No. 4,241,228, which is a division of Ser. No. 932,677, Aug. 10, 1978, Pat. No. 4,173,585. This application May 14, 1980, Ser. No. 149,650

The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.

Int. Cl.[3] **C07C** *31/13;* **A61K** *7/46*

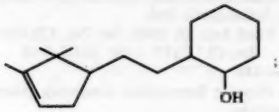
U.S. Cl. 252—522R **4 Claims**

1. The compound having the structure:



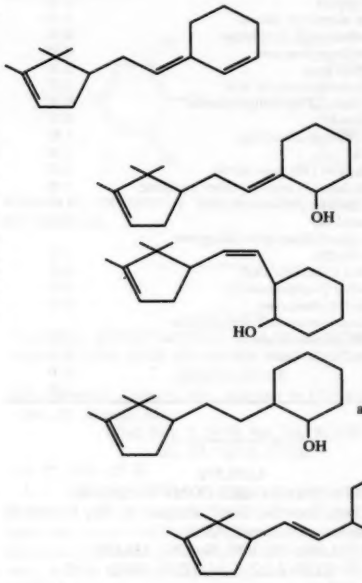
3. A process for augmenting or enhancing the organoleptic properties of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material an organoleptic property-augmenting or enhancing quantity of at least one material selected from the group consisting of:

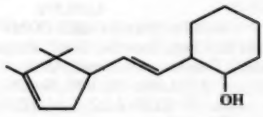
(i) The compound having the structure:



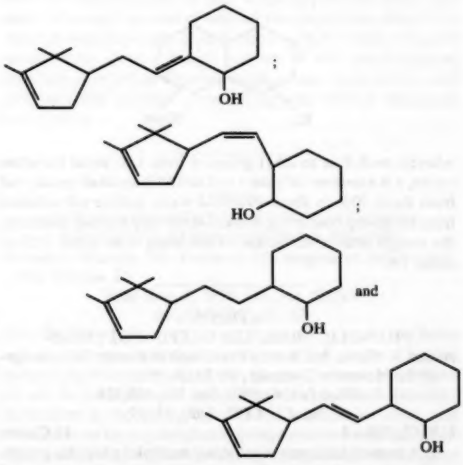
;

(ii) A mixture of compounds having the structures:





(iii) A mixture of compounds having the structures:



4,278,570
COSMETIC CLEANSER FORMULATION

Merlyn G. Flom, Noblesville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 20, 1980, Ser. No. 179,628
Int. Cl.³ C11D *1/84;* A61K *7/48*
U.S. Cl. 252—546 **1 Claim**

1. A skin cleanser formulation consisting essentially of, in percent by weight:

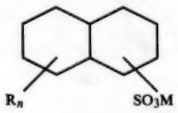
Ingredients	Percent
deionized water	39.73
propylene glycol	6.00
magnesium aluminum silicate	1.10
sodium carboxymethyl cellulose	0.10
methyl p-hydroxybenzoate	0.20
imidazolidinyl urea	0.30
ethylenediaminetetraacetic acid	0.02
sodium N-lauryl-β-iminodipropionate	4.00
titanium dioxide	0.75
sodium isostearoyl-2-lactylate	2.00
soya sterols	1.00
polyoxyethylene (10) soya sterols	2.50
polyoxyethylene (3) myristyl ether myristate	8.00
polyoxypropylene (15) stearyl ether	8.00
heavy mineral oil	8.00
propylene glycol dicaprylate/dicaprate (80/20 to 50/50)	7.00
cetyl alcohol (1-hexadecanol)	4.00
stearyl alcohol (1-octadecanol)	2.00
propyl p-hydroxybenzoate	0.10
glyceryl monostearate and polyethylene glycol (100) monostearate	2.00
triple pressed stearic acid	2.50
lactic acid	0.10
fragrance	0.60

4,278,571
SURFACTANT CAKE COMPOSITIONS

Clement K. Choy, Danville, Calif., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 28, 1980, Ser. No. 154,000
Int. Cl.³ C11D *1/22, 3/04, 17/00;* E03D *9/02*
U.S. Cl. 252—558 **4 Claims**

1. A solid cake composition comprising from about 20% to about 50% of a naphthalene sulfonate surfactant of the formula



wherein each R is an alkyl group of from 1 to about 6 carbon atoms, n is a number of from 1 to 2 and M is an alkali metal, and from about 30% to about 80% of a water soluble salt selected from the group consisting of alkali metal sulfates and chlorides, the weight ratio of surfactant to salt being from about 1:0.3 to about 1:4.

4,278,572
PHENOLIC MODIFIED OLEFIN POLYMERS

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 4, 1980, Ser. No. 109,728
Int. Cl.³ C08L *7/00, 61/10*
U.S. Cl. 260—3 **42 Claims**

1. A mono-olefin polymer having methylol phenolic groups grafted thereto by links of the type formed by the reaction of mono-olefin polymer and methylol phenolic material in the presence of an activator.

4,278,573
PREPARATION OF CATIONIC STARCH GRAFT COPOLYMERS FROM STARCH, N,N-METHYLENEBISACRYLAMIDE, AND POLYAMINES

Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Apr. 7, 1980, Ser. No. 138,015
Int. Cl.³ C08L *3/02*
U.S. Cl. 260—17.4 GC **13 Claims**

1. As a composition of matter, a starch-g-poly(N,N'-methylenebisacrylamide-co-amine) copolymer, comprising a N,N'-methylenebisacrylamideamine copolymer grafted to a starch base through said N,N'-methylenebisacrylamide, wherein said amine is a polyamine containing at least two primary or secondary amine groups or mixtures thereof.

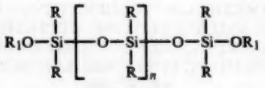
4,278,574
POLYSILOXANE-MODIFIED PAINT BINDERS AND PROCESS FOR PRODUCING THE BINDERS

Gert Dworak, and Hansjörg Aigner, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Dec. 19, 1978, Ser. No. 971,002
Claims priority, application Austria, Dec. 27, 1977, 9304/77
Int. Cl.³ C08L *35/00, 67/02*
U.S. Cl. 260—22 CB **17 Claims**

1. A process for producing paint binders water soluble upon neutralization with bases wherein

(A) 50–85% by weight of a polyester resin containing chemically bonded thereto from 5–40% by weight of a polysiloxane of the general formula



wherein

R is an alkyl, cycloalkyl, aryl or alkoxy radical,

R_1 is hydrogen or an alkyl radical and

n is an integer of from 0–40;

said polyester having a hydroxyl number of from about 50–400 mg KOH/g, an acid value of below about 10 mg KOH/g, and an intrinsic viscosity of from about 6–11 ml/g, measured in dimethylformamide at 20° C.; and

(B) 15–50% by weight of a film forming resin selected from the group consisting of

(a) addition products of maleic anhydride to unsaturated fatty acids or their esters of their dehydrated or isomerized derivatives,

(b) copolymers of maleic anhydride with other alpha, beta-ethylenically unsaturated monomers, and

(c) polyester resins prepared by using a stoichiometric excess of polycarboxylic acids, whereby the anhydride groups of (a) and (b) are opened by hydrolysis or semi-ester formation with monohydric alcohols;

said resin containing carboxyl groups to provide an acid value of from about 100–300 mg KOH/g and an intrinsic viscosity of from about 5–9 ml/g, measured in dimethylformamide at 20° C.; the ratio of the intrinsic viscosity values of components (A) and (B) being governed by the relation

$$\eta A/\eta B = 1.2 \text{ to } 2.2,$$

are condensed at about 80°–150° C. to an intrinsic viscosity of from about 8–15 ml/g.

4,278,575

MODIFIED ACRYLIC COPOLYMER AND COATING COMPOSITION COMPRISING SUCH COPOLYMER

Hidehisa Nakamura; Ryoichi Hori, both of Sakai; Emiko Isomoto, Kishiwada, and Yoichi Murakami, Osaka, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Japan

PCT No. PCT/JP78/00013, §371 Date Jun. 28, 1979, §102(e) Date Jun. 19, 1979, PCT Pub. No. WO79/00240, PCT Pub. Date May 3, 1979

This PCT application filed Oct. 26, 1978, Ser. No. 101,109

Claims priority, application Japan, Oct. 28, 1977, 52-128720

Int. Cl.[3] C09D *3/68, 3/81*

U.S. Cl. 260—22 CB 6 Claims

1. A coating composition comprising a mixture of vehicle, solvent and a pigment, which vehicle is a modified acrylic copolymer having a weight average molecular weight/number average molecular weight ratio within the range of from 3 to 20, said copolymer being obtained by the polymerization of 1 to 40% by weight of a polyester containing an unsaturated double bond, 0.05 to 10% by weight of a dialkylaminoalkyl (meth)acrylate, 10 to 83.95% by weight of methyl methacrylate and 15 to 78.95% by weight of another polymerizable monomer.

4,278,576

ISOLATION AND IMPROVEMENT OF IMPACT MODIFIER POLYMER POWDERS

Theodore D. Goldman, Washington Crossing, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 5, 1978, Ser. No. 966,695

Int. Cl.[3] C08K *9/04;* C08L *9/02, 9/06*

U.S. Cl. 260—23 AR 24 Claims

1. A method of isolating impact modifier polymers as powders and imparting anti-compaction and powder flow properties to said powders comprising introducing about 0.5 to 50% by weight, based on mixture, of stearate coated calcium carbonate having an average particle size of about 0.04 to 1 micron after formation of said polymer but before or during isolation of powders.

4,278,577

BIS(SULFONAMIDE) STABILIZERS FOR SYNTHETIC POLYMERS

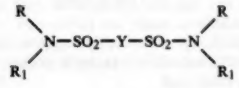
John Song, Carlsbad, Calif., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 79,690, Sep. 28, 1979, abandoned. This application Jul. 23, 1980, Ser. No. 171,620

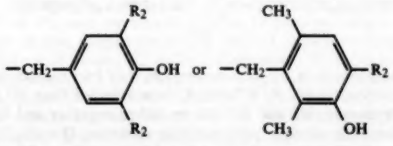
Int. Cl.[3] C08L *91/00;* C07C *143/79*

U.S. Cl. 260—23 H 20 Claims

1. A compound of the formula:

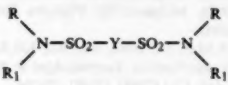


wherein Y is selected from phenylene, biphenylene and phenylene or biphenylene substituted with one to four alkyl (C_1–C_{18}) groups, R is alkyl (C_1–C_{18}); R_1 is

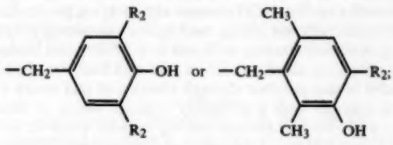


and R_2 is branched alkyl (C_3–C_{12}).

13. A stabilized composition comprising a synthetic polymer normally subject to the deteriorative effects of heat and a stabilizing amount of a compound of the formula:



wherein Y is selected from phenylene, biphenylene, and phenylene or biphenylene substituted with one to four alkyl (C_1–C_{18}) groups, R represents alkyl of 1 to 18 carbon atoms and R_1 represents



wherein R_2 represents a branched alkyl radical of 3 to 12 carbon atoms.

4,278,578

COATING COMPOSITION FOR SYNTHETIC PLASTIC SUBSTRATES AND METHODS FOR PREPARING AND USING SAME

Dale Carpenter, Agency, Mo., assignor to Hillyard Enterprises, Inc., St. Joseph, Mo.

Filed Nov. 5, 1979, Ser. No. 91,379

Int. Cl.[3] G08L *93/00*

U.S. Cl. 260—27 R 18 Claims

1. An aqueous coating composition comprising water having dispersed therein a polyfunctional aziridine cross-linking agent, an aqueous colloidal dispersion of a carboxy functional urethane polymer, a carboxy functional acrylic copolymer latex and an aqueous alkali soluble carboxy functional resin selected from the group consisting of dibasic acid modified rosin esters and styrene-maleic anhydride copolymers, said composition having a solids content of about 5 to about 65 weight percent, wherein said solids are comprised of about 1 to about 25 weight percent of said urethane polymer, about 1 to about 25 weight percent of said acrylic copolymer, about 1 to about 10 weight percent of said aqueous alkali soluble resin and about 0.2 to about 3 weight percent of said polyfunctional aziridine, all based on the total weight of said composition, said polyfunctional aziridine cross-linking said carboxy functional components.

4,278,579

AQUEOUS COATING SYSTEMS CONTAINING BISPHENOL-FORMALDEHYDE ETHERS

Edward J. Murphy, Mt. Prospect, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Aug. 6, 1979, Ser. No. 63,715

Int. Cl.[3] C08L *61/12*

U.S. Cl. 260—29.3 14 Claims

1. An aqueous coating composition which cures on baking comprising an aqueous dispersion of a reactive resin solubilized by salt formation, and a water insoluble bisphenol-formaldehyde ether as the curing reactant for said reactive resin, said reactive resin having functional groups reactive with the etherified methylol groups on said bisphenol-formaldehyde ether when a coating is baked.

4,278,580

CATHODICALLY DEPOSITABLE PAINT BINDERS AND PROCESS FOR PRODUCING SAME

Gerhard Schmölzer; Wolfgang Daimer, and Heiner Verdino, all of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Mar. 31, 1980, Ser. No. 135,861
Claims priority, application Austria, Apr. 9, 1979, 2606/79
Int. Cl.³ C08G *18/80, 59/14*
U.S. Cl. 260—29.2 EP 13 Claims

1. Cathodically depositable paint binders water-soluble upon neutralization with acids comprising the reaction product of a polymer having an epoxy equivalent of between about 180 and 1500 with from about 3 to 70 mole percent per mole of epoxy groups on said polymer of a polyisocyanate adduct having substantially no free NCO content and carrying per molecule at least one carboxyl group, said epoxy containing polymer having basic functionality sufficient to solubilize said binder in water upon neutralization with an acid, said basic functionality provided in said polymer through reaction of said epoxy containing polymer with a secondary aliphatic amine or alkanol amine, said reaction product having an acid value of below about 5 mg KOH/g and an amine value of from about 24 to 150 mg KOH/g.

4,278,581

MOLD BINDER MATERIAL

Tetsuo Nakazawa, Shimoinayoshi; Junji Sakai, Minorimachi; Syogo Morimoto, Matsudo; Takatoshi Tanigawa, Tokyo; Ryoji Takahashi, Yukuhashi, and Seiji Okazaki, Kitakyushu, all of Japan, assignors to Hitachi, Ltd. and Hitachi Metals, Ltd., both of Tokyo, Japan

Filed Sep. 26, 1978, Ser. No. 946,020
Claims priority, application Japan, Sep. 28, 1977, 52-115588; Sep. 28, 1977, 52-115589; Sep. 28, 1977, 52-115592; Sep. 28, 1977, 52-115594
Int. Cl.³ C08L *23/08*
U.S. Cl. 260—29.6 M 9 Claims

1. A mold binder material for a mold to be hardened with a CO_2 gas, which comprises a combination of an aqueous solution of at least one caustic alkali-neutralized copolymer selected from the group consisting of α-olefin-maleic anhydride copolymer, styrene-maleic anhydride copolymer, and methylvinyl ether-maleic anhydride copolymer; not more than 800%, on the basis of the caustic-alkali neutralized copolymer, of at least one multi-valent metal oxide or hydroxide; and 3 to not more than 100% by weight of the sodium salt of gluconic acid or of polyhydric alcohol on the basis of the aqueous solution of caustic-alkali neutralized copolymer.

4,278,582

REMOVAL OF RESIDUAL ACRYLONITRILE MONOMER

James R. Miller, Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 25, 1980, Ser. No. 124,039
Int. Cl.³ C08F *6/10, 6/16, 6/24, 6/28*
U.S. Cl. 260—29.6 AN 13 Claims

1. A process for reducing residual acrylonitrile monomer in a medium containing said acrylonitrile comprising adding to said medium a sufficient amount of a reactive substance to reduce the content of said monomeric acrylonitrile to less than about 100 parts per million in said medium, said reactive substance is selected from the group consisting of hydrogen sulfide, alkali metal and alkaline earth metal phosphates and silicates, and mixtures of said reactive substances.

10. A process for reducing residual acrylonitrile monomer in a medium containing up to about several thousand parts per million of monomeric acrylonitrile comprising adding to said medium a sufficient amount of a reactive substance selected from ammonia, ammonium hydroxide, thioalcohols, alkali metal and alkaline earth metal carbonates, and mixtures of said reactive substances, to reduce the content of said monomeric acrylonitrile to less than 100 parts per million in said medium.

4,278,583

PAPER COATING COMPOSITION

Masayoshi Sekiya, Tokyo, Japan, assignor to Nippon Zeon Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 929,914, Aug. 1, 1978, abandoned. This application Dec. 20, 1979, Ser. No. 105,608
Claims priority, application Japan, Aug. 10, 1977, 52/95932
Int. Cl.³ C08L *33/02*
U.S. Cl. 260—29.7 H 11 Claims

1. A paper coating composition comprising:
(I) 100 parts by weight of a pigment, and
(II) 1 to 30 parts by weight, as solids contents, of a latex comprising a copolymer derived from 20 to 50% by weight of an aliphatic conjugated diolefin, 0.5 to 4.8% by weight of an ethylenically unsaturated acid monomer, 0.5 to 4% by weight of an ethylenically unsaturated amine monomer, and 10 to 74% by weight of a mono-olefinically unsaturated monomer, selected from aromatic vinyl compounds, alkyl acrylates, alkyl methacrylates and ethylenic nitrile compounds, and an emulsifier in an amount of not more than 1% by weight based on the copolymer, said latex having a gel point within a pH range of 3.5 to 8.5 and being gellable during the drying of a paper coated with said composition,

said composition having a higher pH than the gel point of the latex.

4,278,584

ORGANIC FRICTION MATERIAL

Kazuo Noguchi, Iwaki; Hiroto Fujimaki, Kokubunji; Kiyoshi Tagaya, Iwaki; Shigetoshi Ajima, Iwaki; Kazutoshi Takada, Iwaki, and Kensuke Okuda, Tokorozawa, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,730
Claims priority, application Japan, Apr. 26, 1979, 54-51937
Int. Cl.³ C08L *61/06*
U.S. Cl. 260—38 6 Claims

1. An organic friction material comprising:
(a) 10 to 30% by volume of phenol-formaldehyde resin,
(b) 15 to 50% by volume of carbon fibers,
(c) 7 to 20% by volume of steel fibers, and
(d) 10 to 15% by volume of inorganic- and/or organic fillers.

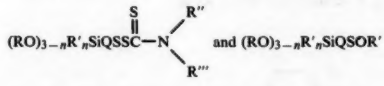
4,278,585

RUBBER COMPOSITIONS

Carl J. Stacy, and Rector P. Louthan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 31, 1979, Ser. No. 62,390
Int. Cl.³ C08K *9/06*
U.S. Cl. 260—42.15 16 Claims

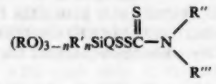
1. A silica-containing vulcanizable composition comprising:
(a) a vulcanizable natural or synthetic rubber;
(b) a siliceous filler; and
(c) at least one sulfur-containing organosilicon compound of the formulas



wherein R′ is a hydrocarbon radical of 1 to 10, inclusive, carbon atoms, R, R″ and R‴ are selected from R′ and hydrogen, R″ and R‴ can be linked together and form with the nitrogen atom a cyclic structure, Q is alkylene, cycloalkylene, arylene, or combinations thereof having from 1 to about 10, inclusive, carbon atoms, and n is 0, 1,

or 2, said organosilicon compound increasing the bonding of said siliceous filler to said rubber.

11. A compound suitable for use as coupling agents or promoters in the silica filler reinforcement of a rubber represented by the formula



wherein R′ is a hydrocarbon radical of 1 to 10, inclusive, carbon atoms, R, R″ and R‴ are selected from R′ and hydrogen, R″ and R‴ can be linked together and form with the nitrogen atom a cyclic structure, Q is alkylene, cycloalkylene, arylene, or combinations thereof having from 1 to about 10, inclusive, carbon atoms, and n is 0, 1, or 2.

4,278,586

GLASS FIBER-REINFORCED POLYOLEFINS

Roberto Marzola, Ferrara, and Enea Garagnani, Piumazzo, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Aug. 31, 1979, Ser. No. 71,481

Claims priority, application Italy, Sep. 1, 1978, 27243 A/78; Jul. 26, 1979, 24668 A/79

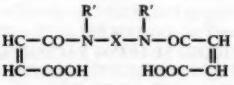
Int. Cl.³ C08K *7/14*

U.S. Cl. 260—42.18 **12 Claims**

1. Blends consisting of:

(a) 50–90% by weight of a crystalline polyolefin, and

(b) 50–10% by weight of glass fibers, characterized in that said blends contain from 0.5 to 5% by weight, with respect to the polyolefin, of a bis-maleamic acid of the general formula:



wherein X is a $(CHR)_n$ group, in which n is an integer from 2 to 18, and R is hydrogen or an alkyl with 1–6 carbon atoms, or X is a cycloaliphatic or aromatic bivalent group including such groups having several nuclei, or a heterocyclic group; R′ is hydrogen, the two R's together being capable of forming a $(CHR)_n$ group which X is $(CHR)_n$.

4,278,587

VULCANIZABLE RUBBER MIXTURE BASED ON HALOGEN FREE RUBBER FOR VULCANIZING THESE RUBBER MIXTURES AND USE OF THE RUBBER MIXTURES

Siegfried Wolff, Bornheim-Merten, and Ewe-Hong Tan, Bruhl, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 14, 1980, Ser. No. 178,160

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933345

Int. Cl.³ C08K *5/54*

U.S. Cl. 260—42.37 **76 Claims**

1. A vulcanisable rubber mixture comprising (1) a vulcanisable halogen fgree rubber or a mixture of such a rubber with a halogen containing rubber in an amount up to 80% based on the total weight of the rubber, (2) a silicate filler in an amount of 1 to 250 parts by weight, (3) 0 to 15 parts by weight of an oxide of zinc, magnesium or lead, (4) 0 to 10 parts by weight of a fatty acid having 12 to 24 carbon atoms, benzoic acid or salicylic acid, (5) 0 to 15 parts by weight of sulphur or a sulphur donor or a mixture thereof, (6) 0.1 to 10 parts by weight of a vulcanisation accelerator, (7) 0 to 100 parts by weight of a plasticizer (8) 0 to 10 parts by weight of at least one member of the group consisting of an antiager, a fatigue protecting agent, an antioxidant, a light protective agent and an ozone protective agent, (9) 0 to 150 parts by weight of carbon black and (10) 0.1 to 20 parts by weight of silane corresponding to the following formula

$$X_p\text{—}C_mH_{2m+1-p}SiR_n^1(OR)_{3-n}, \qquad \text{I}$$

in which

X is chlorine or bromine

p is 1 or 2,

m is 1 to 5,

R^1 is a C_1- to C_5-alkyl group, a C_5- to C_8-cycloalkyl group or the phenyl group,

R is a C_1- to C_5-alkyl group, a C_5- to C_8-cycloalkyl group, the methoxyethyl group, the phenyl group or the benzyl group and n is 0, 1 or 2,

or a hydrolysate or condensate of the organosilane of formula I, all of the amounts being based on 100 parts by weight of the rubber.

4,278,588

PHOSPHINE OXIDE FLAME RETARDED, RUBBER-MODIFIED, POLYPHENYLENE ETHER RESIN COMPOSITIONS

Albrecht H. Granzow, Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 24, 1979, Ser. No. 78,532

Int. Cl.³ C08K *3/32*

U.S. Cl. 260—45.7 P **6 Claims**

1. A flame retardant composition comprising a homogenous blend of polymers containing about 10 to 90 parts by weight of polyphenylene ether resin, about 90 to 10 parts by weight of polystyrene, and a flame retardingly effective amount less than 6% by weight based upon the blend of polymers of a compound of the formula

$$(R)_3P{=}O$$

wherein R is (alkyl containing about 1 to 6 carbon atoms) n-propyl or n-butyl.

4,278,589

2-[2-HYDROXY-3,5-DI-(α,α-DIMETHYLBENZYL)-PHENYL]-2H-BENZOTRIAZOLE AND STABILIZED COMPOSITIONS

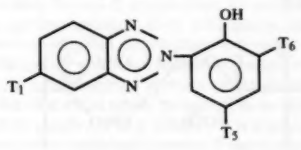
Martin Dexter, Briarcliff Manor, and Roland A. E. Winter, Armonk, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 918,984, Jun. 26, 1978. This application May 10, 1979, Ser. No. 36,914

Int. Cl.³ C08K *5/34*

U.S. Cl. 260—45.8 NT **10 Claims**

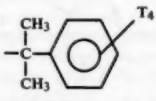
1. A compound of the formula



wherein

T_1 is hydrogen or chloro,

T_5 is tert-octyl or the group



where

T_4 is hydrogen or lower alkyl.

T_6 has the same meaning as T_5, with the proviso that one of T_5 and T_6 must be tert-octyl, but both cannot be tert-octyl.

6. A composition of matter comprising an organic material subject to light-induced deterioration stabilized with from 0.1 to 5% by weight of a compound according to claim 1.

4,278,590

2-[2-HYDROXY-3,5-DI-TERT-OCTYLPHENYL]-2H-BENZOTRIAZOLE AND STABILIZED COMPOSITIONS

Martin Dexter, Briar Cliff Manor, and Roland A. E. Winter, Armonk, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 68,275, Aug. 20, 1979, which is a continuation of Ser. No. 6,391, Jan. 25, 1979, abandoned. This application Dec. 17, 1979, Ser. No. 100,400

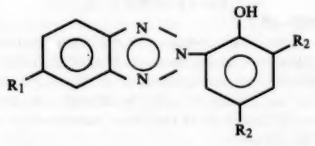
Int. Cl.[3] C08K 5/34

U.S. Cl. 260—45.8 NT 13 Claims

1. An automotive topcoat finish, lacquer or enamel composition exhibiting retention of gloss and resistance to delamination on weathering which comprises

(a) a thermoplastic acrylic resin or a thermoset acrylic resin,

(b) 0.1 to 5% by weight of resin of a compound of the formula



wherein

R_1 is hydrogen or chloro, and

R_2 is tert-octyl, and

(c) 0.1 to 5% by weight of resin of a hindered amine light stabilizer.

4,278,591

FLAME RETARDANT POLY(BUTYLENE TEREPHTHALATE) COMPOSITION

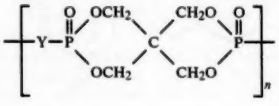
Albrecht H. Granzow, Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 20, 1979, Ser. No. 105,686

Int. Cl.[3] C08K 5/34, 5/52, 5/53

U.S. Cl. 260—45.75 D 5 Claims

1. A method of flame retarding a poly(1,4-butylene terephthalate) polymer comprising incorporating therewith an effective flame retardant amount of a combination of melamine pyrophosphate and a polymeric pentaerythrityl phosphonate of formula (I)



(I)

wherein Y is selected from

(a)
(b)

wherein n is at least 2; x is an integer from 1 to 8; y is an integer from 0 to 4; and the weight ratio of melamine pyrophosphate to polymeric phosphonate is from about 1:5 to about 5:1.

4,278,592

PROCESS AND APPARATUS FOR THE PRODUCTION OF STERILE FILTERED BLOOD CLOTTING FACTORS

Arnold Seufert, Obere Kirchgasse 14, 8782 Karlstadt, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,425

Int. Cl.[3] A61K 35/16, 37/02; C07G 7/00

U.S. Cl. 260—112 B 6 Claims

1. A process for the manufacture of sterile filtered blood clotting products from fibrinogen with an enrichment of Factor 1, comprising the steps of:

extracting blood from at least one donor;

physically separating the blood to obtain substantially purified plasma, free of cellular componets, said separating step being carried out in a sequence of at least two centrifuging steps, to obtain plasma with an increasing degree of purity;

deep freezing the purified plasma at a temperature below about minus 22° C.;

thawing the plasma to produce a cyro-precipitate;

drawing off the plasma present above the cyro-precipitate and manufacturing fibrinogen from said plasma in a known manner;

dissolving the fibrinogen in a buffer; and

effecting a sterile filtration of the buffer-dissolved fibrinogen by means of a static filtration device at a pressure of less tha 0.5 atm.

4,278,593

GLUCOCORTICOID SPARING FACTOR AND PROCESS FOR THE PRODUCTION OF THE SAME

Nobuhiko Katsunuma, No. 1-78, Shomachi, Tokushima-shi, Tokushima-ken, Japan

Filed Jan. 2, 1980, Ser. No. 109,095

Claims priority, application Japan, Jan. 11, 1979, 54-2566

Int. Cl.[3] C12P 21/00; C07G 7/00

U.S. Cl. 260—112 R 8 Claims

1. A glucocerticoid sparing factor characterized in that:

it is a colorless and acidic substance produced in a culture broth of a microorganism of the Family Enterobacteriaceae;

it has a molecular weight between about 400 and about 1,000;

it is a uridine derivative having uracil, pentose, hexose and phosphate radical which can be easily hydrolyzed by the action of acids;

it amplifies the liver enzyme induction, with said amplifying action being deactivated by the action of α-glucosidase and phosphodiesterase II, but not being affected by the action of α-amylase, neuraminidase, hyaluronidase, lysozyme, chymotripsin, trypsin, pepsin, proteinase, papain, collagenase, aminopeptidase M, carboxypeptidases A and B, leucine-aminopeptidase, deoxyribonuclease 1, ribonuclease T_1+A, acid phosphatase or alkali phosphatase;

it is stable for more than 6 months at −20° C.;

it is stable for minimum of 48 hours in a buffer solution having a pH of 4.2–9 at 37° C.;

it is deactivated to form reducing sugar when heated at 105° C. for 12 hours in 6 N hydrochloric acid;

it has a peak at 260 nm in the ultraviolet absorption spectrum; and

it has an Rf of about 0.51 as measured by ascending method using filter paper and isopropanol-aqueous ammonia-water (7:1:2 v/v) as a developing agent.

4,278,594

PROCESS FOR SEPARATION AND ISOLATION OF AHF, VON WILLEBRAND'S RISTOCETIN COFACTOR (VWF:RCF) AND FIBRONECTIN FROM BLOOD PLASMA

David Amrani, 75 Rumson Rd., Staten Island, N.Y. 10304

Continuation-in-part of Ser. No. 49,965, Jun. 19, 1979, Pat. No. 4,210,580. This application Jun. 2, 1980, Ser. No. 152,628
The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.
Int. Cl.[3] A23J *1/06;* A61K *35/16;* C07G *7/00*
U.S. Cl. 260—112 B 18 Claims

1. A process for the separation and isolation of the AHF fraction, the fibronectin fraction and the von Willebrand's ristocetin cofactor fraction from blood plasma comprising:
(a) adding a sulfated mucopolysaccharide to blood plasma to a concentration of 0.05–0.4 mg/ml of plasma;
(b) then cooling said plasma to 0° C.–15° C.;
(c) centrifuging the plasma to isolate a precipitate which forms;
(d) removing the supernatant liquid from the precipitate said supernatant liquid being rich in AHF;
(e) washing the precipitate in a slightly basic solution of dilute salts;
(f) thereafter dissolving said precipitate in a buffered solution of chaotrophic salts of the Hofmeister series having an ionic strength from 0.01–1;
(g) and thereafter separating said fibronectin from the dissolved precipitate which contains fibronectin, fibrinogen and von Willebrand's ristocetin cofactor by chromatographic means.

4,278,595

ORALLY ACTIVE MIF ANALOGS WITH AN EFFECT ON THE CENTRAL NERVOUS SYSTEM

Joseph H. Cort, New York, N.Y., assignor to Vega Laboratories, Inc., Tucson, Ariz.

Filed Dec. 10, 1979, Ser. No. 102,149
Int. Cl.[3] C07C *103/52;* A61K *37/00*
U.S. Cl. 260—112.5 R 5 Claims

1. A tripeptide represented by the general formula:

$$X—D—Leu—Gly—NR^1R^2$$

wherein X is the proline (Pro) or pyróglutamic acid (pGlu) residue, D-Leu is the D-leucine residue, Gly is the glycine residue, and each of R^1 and R^2, when taken separately, is hydrogen or lower alkyl with the proviso that when X is proline, R^2 is lower alkyl.

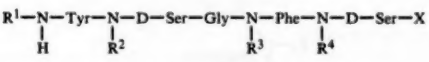
4,278,596

ANALGESIC PENTAPEPTIDES

Victor M. Garsky, Radnor, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Aug. 8, 1978, Ser. No. 932,089
Int. Cl.[3] C07C *103/52;* A61K *37/00*
U.S. Cl. 260—112.5 R 5 Claims

1. A compound of the formula:



wherein R^1 is hydrogen, methyl, ethyl, propyl, 2-methyl-2-pentenyl, 2-methyl-1-pentenyl; cyclopropylmethyl, or cyclobutylmethyl; R^2, R^3, and R^4 are, independently, hydrogen or methyl; and X is $—NH_2$, $—NHC_nH_{2n+1}$ where n is 1, 2, 3, or 4, $—OR^5$, or CH_2OR^5, where R^5 is hydrogen or lower alkyl of from 1 to 4 carbon atoms; or a pharmaceutically acceptable salt thereof.

4,278,597

PROTEIN ISOLATE HAVING LOW SOLUBILITY CHARACTERISTICS AND PROCESS FOR PRODUCING SAME

Iue C. Cho; Christopher W. Frederiksen, both of St. Louis, and Ralph A. Hoer, Ballwin, all of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Jun. 11, 1980, Ser. No. 158,191
Int. Cl.[3] A23J *3/00*
U.S. Cl. 260—123.5 20 Claims

17. A method of forming a soy protein isolate having a nitrogen solubility index (NSI) below about 20 comprising:
(a) forming an aqueous slurry of isolated soy protein having a solids level of between about 4 to 25% by weight, said protein having a high degree of dispersibility;
(b) controlling the pH of the slurry to between about 4.5 to 5.8 by the addition of a monovalent alkali reagent selected from the group consisting of alkali metal hydroxides, alkali metal carbonates, and ammonium hydroxide;
(c) heating said slurry to a temperature of between about 170°–200° F. for a time sufficient to obtain said isolate with a NSI below about 20; and
(d) neutralizing said slurry to a pH of 6.8 to 7.2 by adding between about 0.25 to 1.0% by weight of the solids of said slurry of an alkaline earth cation.

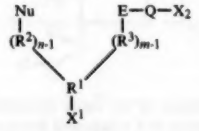
4,278,598

POSITIVE-WORKING IMMOBILE INTRAMOLECULAR NUCLEOPHILIC DISPLACEMENT COMPOUNDS AND PHOTOGRAPHIC ELEMENTS CONTAINING SAME

Gerald C. Hinshaw, Penfield, and Paul B. Condit, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 534,966, Dec. 20, 1974, Pat. No. 4,199,354, which is a continuation-in-part of Ser. No. 326,628, Jan. 26, 1973, abandoned. This application Sep. 1, 1976, Ser. No. 719,643
Int. Cl.[3] C09B *29/26, 29/28, 29/36*
U.S. Cl. 260—157 34 Claims

1. A compound having the formula:



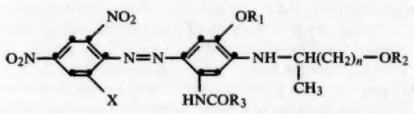
wherein R^1 is an aromatic group containing 5–7 members in the ring to which Nu and E are attached; R^2 and R^3 are bivalent organic groups containing from 1–3 atoms in the bivalent linkage which are alkylene, oxyalkylene or thiaalkylene; Nu is a nucleophilic group which is a hydrazine, an hydroxyamino, an hydroxy, a sulfonamido, a primary amino or alkali-labile precursors for said nucleophilic groups; E is an electrophilic group which is a carbonyl or a sulfonyl; Q is a bivalent group providing a mono atom linkage between E and X_2 and is amino providing a mono atom nitrogen linkage, an oxygen atom, a sulfur atom or a selenium atom, provided that Nu and E are positioned on a ring of said aromatic carbocyclic group to provide for intramolecular formation of a 5- to 7-membered ring between Nu and E displacing Q—X_2 from E; one of X_1 or Q—X_2 is a ballasting group containing at least 8 carbon atoms, which ballasting group is of a size sufficient to render said compound immobile in an alkaline solution-permeable layer of a photographic element; one of X_1 or Q—X_2 is an azo dye; and n and m are integers of 1 or 2.

4,278,599
MONO AZO DYES FROM (2-ALKOXY-5-ALKANOYLAMINOANILINO)ALKOXY OR ARYLOXY ALKANES

Gary T. Clark, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 18, 1979, Ser. No. 86,115
Int. Cl.³ C07C *107/06*; C09B *29/14*
U.S. Cl. 260—207 6 Claims

1. The dye of the formula



wherein

X is halogen or cyano;

R_1 and R_3 are straight or branched alkyl of 1–10 carbons;

R_2 is 1–4C alkyl which may be substituted with lower alkoxy or aryloxy, aryl or substituted aryl; and

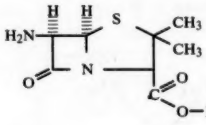
n is an integer 1–4.

4,278,600
PRODUCTION OF PENICILLINS

Derek Walker, Jamesville; Herbert H. Silvestri, Dewitt; Chester Sapino, East Syracuse, and David A. Johnson, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

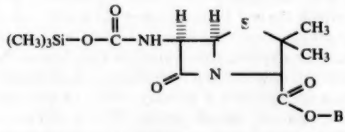
Continuation-in-part of Ser. No. 21,852, Mar. 19, 1979, which is a continuation-in-part of Ser. No. 4,780, Jan. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 970,704, Dec. 18, 1978, abandoned. This application Jul. 20, 1979, Ser. No. 59,401
Int. Cl.³ C07D *499/12*
U.S. Cl. 260—239.1 18 Claims

1. In the process for the conversion of 6-aminopenicillanic acid or a known ester thereof having the formula



I

wherein B is hydrogen or an easily cleavable, conventional ester-protecting group to a compound having the formula



II

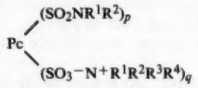
wherein B is trimethylsilyl or an easily cleavable, conventional ester-protecting group which comprises mixing a compound of formula I with at least a small stoichiometrical excess of trimethylsilylating agent in an anhydrous inert organic solvent in the presence as an acceptor of hydrogen chloride of slightly less than an equimolar amount with respect to said trimethylsilylating agent of a solvent-soluble, strong organic base followed by carbonation, the improvement which comprises the addition after silylation and prior to carbonation of an amount of urea which is just sufficient to convert to its hydrochloride all of the free organic base remaining after the silylation.

4,278,601
PROCESS FOR CONDITIONING PHTHALOCYANINE PIGMENT

Ian R. Wheeler, Craigend; George H. Robertson, Paisley, and David McGregor, Glasgow, all of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 18,379, Mar. 7, 1979, abandoned, which is a continuation of Ser. No. 882,682, Mar. 2, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,488
Claims priority, application United Kingdom, Mar. 19, 1977, 11727/77
Int. Cl.³ C09B *47/04*
U.S. Cl. 260—314.5 10 Claims

1. A process for conditioning pigments which comprises grinding a crude copper phthalocyanine pigment and a crystallizing solvent, capable of converting alpha-form copper phthalocyanine into the beta-form thereof, in the absence of inorganic salt but in the presence of one or more sulphonated phthalocyanine amine derivatives having the general formula



(I)

wherein Pc represents a metal or metal free phthalocyanine; R^1, R^3 and R^4 are the same or different and are hydrogen or a residue containing 1 to 22 carbon atoms; R^2 is a residue containing 1 to 22 carbon atoms;

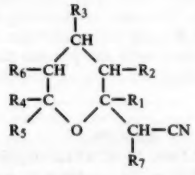
with the proviso that the total number of carbon atoms in the sum of R^1, R^2, R^3 and R^4 is not greater than 66; p is 0 to 3, q is 1 to 4 and the sum of p and q is 1 to 4.

4,278,602
PROCESS FOR SYNTHESIZING PYRAN NITRILES

Lucio Faggian, and Edoardo Platone, both of San Donato Milanese, Italy, assignors to Anic S.p.A., Palermo, Italy

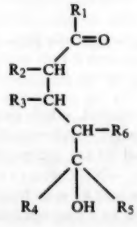
Filed Nov. 15, 1979, Ser. No. 94,599
Claims priority, application Italy, Dec. 19, 1978, 30986 A/78
Int. Cl.³ C07D *309/08*
U.S. Cl. 260—345.1 5 Claims

1. A process for synthesizing pyran nitriles of the formula (I):



(I)

wherein R_1 is alkyl and each of R_2, R_3, R_4, R_5, R_6 and R_7 is hydrogen or alkyl which consists of reacting an aliphatic 1,5-hydroxyketone of the formula (II):



(II)

wherein R_1, R_2, R_3, R_4, R_5 and R_6 are as defined above with an aliphatic nitrile of the formula R_7-CH_2CN wherein R_7 is hydrogen or alkyl in the presence of an alkali metal or alkaline earth metal hydroxide or alcoholate at a temperature between 30° C. and 150° C. and wherein the molar ratio of aliphatic nitrile to hydroxyketone is between 2 and 100.

4,278,603

NOVEL POLYMORPHIC CRYSTALLINE FORM OF DIBENZOPYRANONE

Arvind L. Thakkar, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 707,786, Jul. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 628,521, Dec. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,391, Sep. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 413,011, Nov. 5, 1973, abandoned. This application Aug. 8, 1977, Ser. No. 822,471

Int. Cl.³ C07D *311/80*

U.S. Cl. 260—345.3 **1 Claim**

1. A polymorphic form of dl-1-hydroxy-3-(1',1'-dimethylheptyl)-6,6-dimethyl-6,6a,7,8,10,10a-hexahydro-9H-dibenzo[b,d]pyran-9-one, capable of producing significant blood levels in mammals for long periods of time after oral administration of the drug, prepared by adding an ethanol solution of a non-orally absorbable polymorphic form of the said pyran-9-one recrystallized from either acetone or hexane and incapable of producing significant blood levels of drug after oral administration in mammals, with stirring to a large quantity of water.

4,278,604

PROCESS FOR PREPARING AN ALKENYL-SUBSTITUTED DICARBOXYLIC ACID ANHYDRIDE

Justin C. Powell, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 27, 1979, Ser. No. 70,186

Int. Cl.³ C07D *307/60*

U.S. Cl. 260—346.74 **8 Claims**

1. A method for preparing an alkenyl-substituted acid anhydride which comprises reacting an olefin or a polyolefin polymer having a number average molecular weight ranging from about 40 to 3000 with an unsaturated dicarboxylic acid anhydride at a temperature in the range from about 175° C. to 300° C. employing a mole ratio of from about 0.8 to 5 moles of said anhydride per mole of said olefin or polyolefin in the presence of from about 5 to about 5000 ppm of bromine based on said olefin or polyolefin derived from a brominated phenol selected from the group consisting of ortho-bromophenol, para-bromophenol, ortho-and para-dibromphenol, tetrabromophenol 2,4,6-tribromophenol, and pentabromophenol.

4,278,605

HETEROALKYLENEBISANTHRAQUINONES

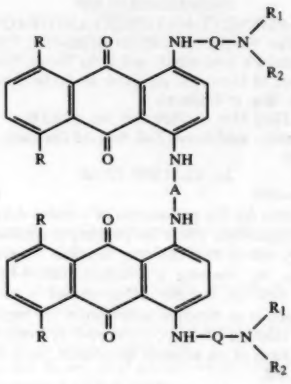
Keith C. Murdock, Pearl River, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jun. 30, 1980, Ser. No. 164,615

Int. Cl.³ A01N *33/02*

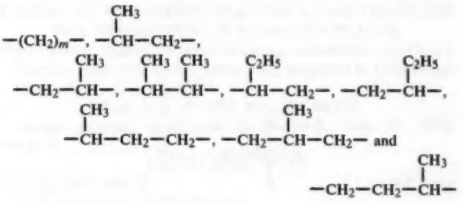
U.S. Cl. 260—367 **16 Claims**

1. A compound selected from the group consisting of those of the formula:



(I)

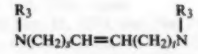
wherein Q is a divalent moiety selected from the group consisting of those of the formulae:



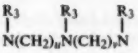
where m is an integer from 2 to 3, inclusive; A is $(CH_2)_nX(CH_2)_p$ where n and p may be the same or different and each may be an integer from 1 to 4 inclusive; X is selected from the group comprising

O, $(CH_2)_q$ where q is zero to 4,

where r is an integer from 2 to 6,



where s and t may be the same or different and each may be an integer from 1 to 3 and the olefin may be cis or trans, and



where u and v may be the same or different and each may be an integer from 2 to 5; R is hydrogen and hydroxy; R_1 and R_2 are each individually selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms and monohydroxyalkyl having from 2 to 4 carbon atoms wherein the carbon atom alpha to the nitrogen atom may not bear a hydroxyl group, R_3 is hydrogen and lower alkyl (C_1-C_3) and pharmaceutically acceptable acid-addition salts thereof.

4,278,606

PREPARATION OF 1-AMINO-2-PHENOXY-4-HYDROXYANTHRAQUINONE

Heinrich Hiller, Wachenheim; Heinz Eilingsfeld, Frankenthal; Helmut Reinicke, Gruenstadt, and Fritz Traub, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 7, 1980, Ser. No. 128,118

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1979, 2910716

Int. Cl.³ C07C *97/26*

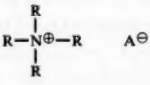
U.S. Cl. 260—380 11 Claims

1. In a process for the preparation of 1-amino-4-hydroxy-2-phenoxyanthraquinone, where the phenoxy is unsubstituted or substituted by one or two chlorine, bromine, C_1–C_4-alkyl or C_1–C_4-alkoxy, by reacting a 1-amino-2-halo-4-hydroxyanthraquinone with the corresponding phenol in an aqueous alkaline medium at an elevated temperature, the improvement comprising reacting 1-amino-2-chloro-4-hydroxyanthraquinone, in the form of an aqueous suspension, with the corresponding phenol,

at a pH of 9–13 and at from 120° to 150° C.,

in the presence of from 1 to 20% by weight, based on the 1-amino-2-chloro-4-hydroxyanthraquinone of:

(a) ammonium salts of the formula

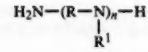


where one or more R's are linear or branched C_4–C_{20}-alkyl or C_7–C_{10}-phenylalkyl, the remaining R's are C_1–C_4-alkyl, and one of the remaining R's may also be phenyl, or $R_3N-\oplus$ is pyridinium, and $A^\ominus$ is one equivalent of an anion, or

(b) ethylene oxide/propylene oxide block copolymers which are obtained:

(α) by reacting hydroxy compounds of the formula $A(OH)_m$, where A is an m-valent aliphatic radical of 2 to 6 carbon atoms, OH is primary or secondary hydroxyl and m is 2 to 4, with from 2 to 40 moles of propylene oxide per equivalent of hydroxyl and subsequent reaction with from 2 to 40 moles of ethylene oxide per equivalent of oxypropylation product, or

(β) by reacting amines of the formula



where R is saturated linear or branched C_2–C_6-alkylene, R^1 is hydrogen, methyl or phenyl and n is from 1 to 5, with from 2 to 40 moles propylene oxide per equivalent of reactive amino hydrogen, followed by reaction with from 2 to 40 moles of ethylene oxide per equivalent of oxypropylation product, or

(c) reaction products of C_2–C_{20}-alkylphenols, C_{12}–C_{20}-alkenylamines, C_{12}–C_{20}-alkylamines or C_8–C_{20}-alkanols with from 3 to 30 moles of ethylene oxide per mole of hydroxy compound or amino compound,

and the reaction product is then isolated.

4,278,607

PROCESS FOR THE PREPARATION OF DIMETHOXYANTHRAQUINONES

Helmut Seidler, Bonn, and Günter Gehrke, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 10, 1980, Ser. No. 110,877

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 2903851

Int. Cl.³ C07C *49/74*

U.S. Cl. 260—383 7 Claims

1. Process for the preparation of dimethoxyanthraquinones by reacting dinitroanthraquinones with potassium hydroxide in methanol, comprising reacting 1 part by weight of dinitroanthraquinone with 2–8 parts by weight of methanol and 0.5–1.5 parts by weight of potassium hydroxide in the presence of 0.05–0.5 parts by weight of amidosulphonic acid until all the nitro groups have been replaced.

4,278,608

ADRENERGIC BLOCKING AGENTS

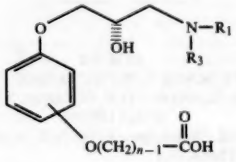
Kenneth E. Fahrenholtz, Bloomfield; Robert W. Guthrie, Saddle Brook, and Richard W. Kierstead, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 73,051, Sep. 6, 1979, Pat. No. 4,247,710, which is a division of Ser. No. 875,966, Feb. 8, 1978, Pat. No. 4,202,978. This application Aug. 22, 1980, Ser. No. 180,288

Int. Cl.³ C07C *143/90;* C11D *1/28*

U.S. Cl. 260—401 2 Claims

1. The compound of the formula



wherein R_1 is lower alkyl, R_3 is selected from the group consisting of mesyl, tosyl, brosyl and benzenesulfonyl and n is 2 to 20.

4,278,609

PROCESS FOR THE SELECTIVE HYDROGENATION OF TRIGLYCERIDE OILS WITH A METALLIC CATALYST IN THE PRESENCE OF AMMONIA

Jan Kuiper, Vlaardingen, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,757

Claims priority, application Netherlands, Jun. 19, 1979, 7904781

Int. Cl.³ C11C *3/12*

U.S. Cl. 260—409 10 Claims

1. Process for the selective hydrogenation of fatty acid derivatives, which contain besides fatty acids with two double bonds fatty acids with more than two double bonds, by contacting the fatty acid derivative with hydrogen at a temperature of −20° to 100° C. in the presence of a hydrogenation catalyst chosen from the group consisting of palladium, platinum, rhodium and iridium, which catalyst is treated with dry ammonia in a molar ratio of ammonia to the metal component of the catalyst of 100:1 to 5000:1.

4,278,610

METHOD OF MAKING AN ORGANIC METAL SALT OR COMPLEX

Gerald L. Maurer, Fairfield, and Virginia E. Stefanini, Cincinnati, both of Ohio, assignors to National Research Laboratories, Cincinnati, Ohio

Continuation-in-part of Ser. No. 932,945, Aug. 11, 1978, abandoned. This application Dec. 20, 1979, Ser. No. 105,623

Int. Cl.[3] C07F *1/08*

U.S. Cl. 260—438.1 25 Claims

1. Method of making an organic metal salt or complex comprising reacting a heavy metal hydroxide with an organic Lewis acid, or salt thereof, in an aqueous reaction medium and in the presence of a gaseous catalyst.

4,278,611

PROCESS FOR SYNTHESIZING ALKOXYALANATES OF ALKALINE EARTH METALS

Salvatore Cucinella, San Donato Milanese, and Giovanni Dozzi, Milan, both of Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Dec. 28, 1979, Ser. No. 108,225

Claims priority, application Italy, Jan. 8, 1979, 19125 A/79

Int. Cl.[3] C07F *5/06*

U.S. Cl. 260—448 AD 8 Claims

1. A process for synthesizing alkoxyalanates of alkaline earth metals of the formula:

$$M[AlH_{4-n}(OR)_n]_2$$

in which M represents an alkaline earth metal, OR represents an alkoxy group of a primary, secondary or tertiary aliphatic, cycloaliphatic or aromatic alcohol, the radical R being simple or amino or alkoxy-substituted, and n is a number between 1.5 and 3.5, the process consisting of reacting an alanate of the alkaline earth metal with an alcoholate of the alkaline earth metal and an aluminum alcoholate in an inert solvent at a temperature between −40° C. and the product decomposition temperature.

4,278,612

2-CHLORO-2-ALKYL SUBSTITUTED PEROXYESTERS

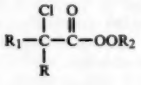
Reidar Halle, Novato, and David Peterson, Hercules, both of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 50,898, Jun. 21, 1979, abandoned. This application Nov. 28, 1979, Ser. No. 98,010

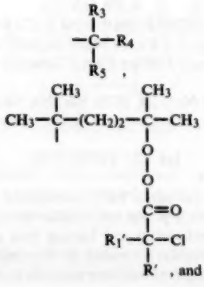
Int. Cl.[3] C07C *179/18*

U.S. Cl. 260—453 RZ 21 Claims

1. A peroxyester of the formula:



wherein R_2 is selected from



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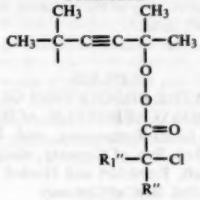


and R and R_1 are alkyl groups which collectively contain up to about 10 carbon atoms providing R_1 and R are not both methyl when R_2 is t-butyl,

R′ and R_1′ are alkyl groups which collectively contain up to about 10 carbon atoms,

R″ and R_1″ are alkyl groups which collectively contain up to about 10 carbon atoms, and

R_3, R_4, and R_5 are alkyl groups which collectively contain up to about 9 carbon atoms.

4,278,613

SULFUR-CONTAINING OXIME COMPOUNDS, PROCESSES FOR PRODUCING THEM, AND THEIR USE FOR PROTECTING CULTIVATED PLANTS

Elmar Sturm, Aesch; Heinrich Schempp, Arlesheim, and Henry Martin, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

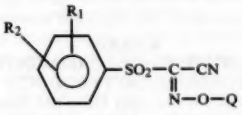
Filed Aug. 20, 1979, Ser. No. 68,123

Claims priority, application Switzerland, Aug. 28, 1978, 9081/78

Int. Cl.[3] C07C *121/52*

U.S. Cl. 260—465 D 6 Claims

1. A compound of the formula



wherein R_1 and R_2 independently of one another are each hydrogen, halogen or C_1–C_4-alkyl, and Q is acetamide or a C_1–C_4-alkyl-substituted carbamoyl group.

4,278,614

PROCESS FOR THE CATALYTICAL PREPARATION OF ACRYLONITRILE

Sumio Umemura; Kyoji Ohdan; Tokuo Matsuzaki; Hiroyuki Asada, and Masao Tsuruoka, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Sep. 10, 1979, Ser. No. 74,232

Claims priority, application Japan, Sep. 13, 1978, 53-111700

Int. Cl.[3] C07C *120/14*

U.S. Cl. 260—465.3 16 Claims

1. A process for the catalytical preparation of acrylonitrile, comprising bringing, at an elevated temperature, a reaction feed containing propylene, molecular oxygen and ammonia, each in gas phase, into contact with a catalyst consisting of an oxide composition of the empirical formula:

$$Mo_aCo_bNi_cFe_dBi_eX_fTi_gO_h$$

wherein X represents at least one atom of an element selected from vanadium and tellurium, the subscripts a, b, c, d, e, f and g respectively denote the numbers of the respective atoms of the elements, the ratio a:b:c:d:e:f:g being in the range of 10:0 to 10:0 to 10:1 to 7:0.08 to 1.1:0.01 to 1:1 to 15, and the ratio of a to the sum of b and c being in a range of 10:3 to 10, and; the

subscript h represents the number of oxygen atoms which satisfies the average valency of the elements, the ratio a:h being in a range of 10:36.7 to 84.1.

4,278,615

PROCESS FOR THE PRODUCTION OF AROMATIC PEROXYCARBOXYLIC ACIDS

Reinhard Stober, Gross-Krotzenburg, and Rolf Wirthwein, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt and Henkel KGaA, Henkelstrasse, both of, Fed. Rep. of Germany

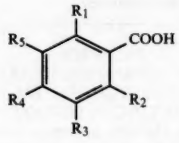
Filed Oct. 24, 1979, Ser. No. 88,053

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1979, 2929839

Int. Cl.³ C07C *179/10*

U.S. Cl. 260—502 R **21 Claims**

1. A process for the production of an aromatic peroxycarboxylic acid comprising introducing with stirring a solid aromatic carboxylic acid of the formula



wherein R_1, R_2, R_3, R_4 and R_5 are hydrogen, COOH, 1–4 carbon atom alkyl, 1–4 carbon atom alkoxy or halogen into a mixture of aqueous 50–99 weight % hydrogen peroxide and sulfuric acid, carrying out the reaction of the aromatic acid with said mixture in heterogeneous phase and recovering the aromatic peroxycarboxylic acid formed, the reaction mixture consisting essentially of the solid aromatic carboxylic acid, water, hydrogen peroxide and sulfuric acid.

4,278,616

4,4'-THIODIPHENOL-FORMALDEHYDE CONDENSATION PRODUCTS

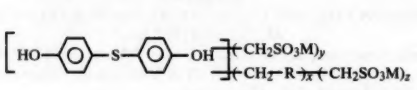
Robert L. Wineholt, Wyomissing Hills, and James F. Feeman, Wyomissing, both of Pa., assignors to Crompton & Knowles Corp., New York, N.Y.

Filed Mar. 29, 1979, Ser. No. 25,011

Int. Cl.³ C07C *143/42, 143/52;* **D06P** *5/02*

U.S. Cl. 260—512 C **9 Claims**

1. A compound having the structure



wherein R is a phenolic radical selected from the group consisting of phenol, a cresol, a xylenol, catechol, resorcinol, a hydroxy-benzoic acid, a napthol, a bisphenol, a phenyl-phenol, and thiodiphenol; x is 1, 2, 3 or 4; y is 0, 1, 2 or 3, z is 0, 1, 2, 3 or 4 and y+z is 1, 2, 3 or 4 and M is H, Na, K, Li, NH_4 or a mono, di or tri alkanol ammonium ion.

4,278,617

HUMIDIFIER

Michael Rahman, Winston-Salem, N.C., assignor to Envirotech Corporation, Menlo Park, Calif.

Filed Mar. 3, 1980, Ser. No. 126,786

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—30 **1 Claim**

1. A humidifier comprising:

(a) a conduit;

(b) a fan assembly mounted in said conduit for rotation about an axis, said fan assembly causing an air stream to flow through said conduit when said fan assembly is rotated;

(c) a water slinger assembly mounted in said conduit downstream of said fan assembly for rotation about said axis, said water slinger assembly including:

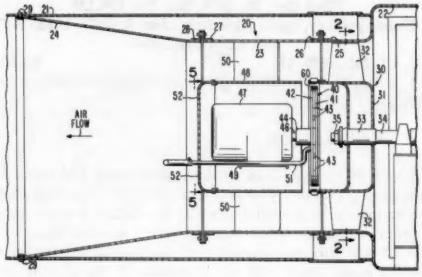
(i) a first plate;

(ii) a second plate, said first and second plate being mounted spaced apart from each other for rotation about said axis; and

(iii) vanes interposed between said first and second plates to define a plurality of water channels, each water channel being located between two adjacent vanes;

(d) means for introducing water into each of said water channels;

(e) means for rotating said water slinger assembly to cause water to be ejected from said water channels into a region peripherally adjacent said water slinger assembly, said means for rotating said water slinger assembly comprises a motor having a shaft that is coaxial with said axis of rotation, said motor being surrounded by a housing structure to protect said motor from substantial accumulation of moisture, said housing structure being of substantially cylindrical configuration having an open end adjacent said water slinger assembly and a closed end remote from said water slinger assembly, said closed end being downstream of said motor and being apertured to enable a stream of air induced by rotation of said water slinger assembly to pass therethrough to ventilate said motor;



(f) a generally cylindrical mist-forming member affixed to said fan assembly and surrounding said region peripherally adjacent said water slinger assembly; and

(g) means for rotating said fan assembly and said attached mist-forming member about said axis in a direction opposite to the direction of rotation of said slinger assembly, said forming member functioning to interact with the water ejected by said water slinger assembly to form a mist of fine water droplets, said fine water droplets becoming entrained in said air stream flowing through said conduit.

4,278,618

ACCELERATION PUMP FOR A CARBURETOR

Keizo Higashigawa, and Kazuo Shinoda, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 29, 1979, Ser. No. 98,612

Claims priority, application Japan, Jul. 24, 1979, 54-102075[U]

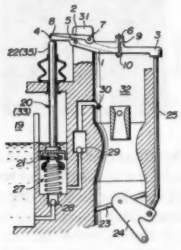
Int. Cl.³ F02M *7/08*

U.S. Cl. 261—34 A **5 Claims**

1. An acceleration pump for a carburetor having a barrel, fuel pumping means, a pump rod slidably secured to the pumping means, an acceleration rod having first and second ends longitudinally movably provided at the carburetor body, a throttle lever having first and second ends rockably secured at

said first end to said first end of said acceleration rod, and a throttle valve rockably installed within the barrel of the carburetor and also secured to the second end of the throttle lever, comprising:

a first rockable member secured to a first fulcrum of the carburetor body and having a first contact end connected to the acceleration rod movable via the throttle lever and the throttle valve and a second contact end making contact with the pump rod; and



a second rockable member secured to a second fulcrum of the carburetor body at the position substantially nearer to the acceleration rod apart from the pump rod and having a first contact end making contact with the pump rod in the same manner as said first rockable member and a second end connected via a spring to said first rockable member.

4,278,619

STEAM THROTTLE VALVE

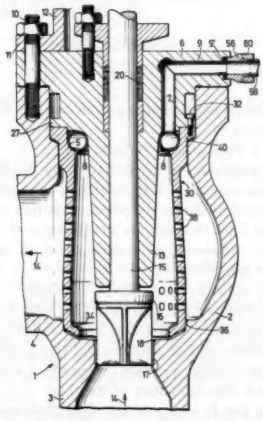
Edelbert Tiefenthaler, Elgg, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Aug. 21, 1980, Ser. No. 179,963

Claims priority, application Switzerland, Sep. 5, 1979, 8012/79

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—62 **9 Claims**



1. A steam throttle valve comprising

a valve body having a steam inlet port and a throttle cross-section disposed on a valve axis downstream of said inlet port;

a valve spindle guide disposed on said valve axis;

a perforated valve cage disposed on said axis downstream of said throttle cross-section and concentrically about said spindle guide to define a flow chamber therebetween;

a thin-walled hollow member between said valve cage and said spindle guide and having injection ducts for directing cooling water into said flow chamber; and

a thin-walled water supply duct in said body for receiving cooling water and being in communication with said hollow member to deliver cooling water into said hollow member for injection into said flow chamber.

4,278,620

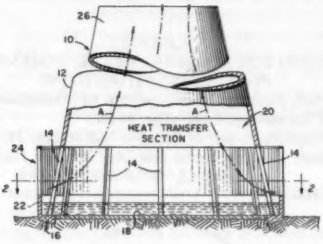
APPARATUS FOR REDUCING THE DETRIMENTAL WIND INFLUENCE ON COOLING TOWERS

Marcel R. Lefevre, Branchburg, N.J., assignor to Research-Cottrell, Inc., Somerville, N.J.

Filed Feb. 19, 1980, Ser. No. 122,174

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—109 **4 Claims**



1. Apparatus for reducing detrimental wind influence on cooling towers comprising:

a cooling tower;

air inlet means at the lower end of the tower;

air outlet means at the upper end of the tower;

air and fluid contact means in the air path between the air inlet means and the air oulet means; and

means mounted in the air inlet means for reducing detrimental wind influence, said means comprising a plurality of spaced baffles, each of said baffles configured as a truncated airfoil in transverse section and having a continuous smooth curved low wind resistance surface directed outwardly of the air inlet means, and a high wind resistance surface directed toward the interior of the tower.

4,278,621

VAPOR-LIQUID CONTACTING SYSTEM

Paul W. Sigmund, Tarrytown, and Kenneth F. Butwell, Newburgh, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

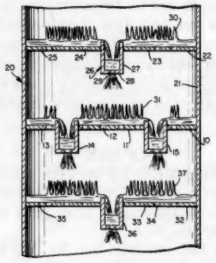
Continuation of Ser. No. 863,350, Dec. 22, 1977, abandoned. This application May 14, 1980, Ser. No. 149,729

Int. Cl.³ B01D *53/14*

U.S. Cl. 261—114 R **5 Claims**

1. In a vapor-liquid absorption column for effecting selective separation of one gaseous component in preference to another gaseous component contained in a gas stream, the improvement including means for providing a laminar jetting hydraulic regime; said means comprising at least one tray having a perforated portion, having fixed size perforation openings, forming an active surface area for vapor-liquid contact in the interior of said tray, with a perforation open area in the interior of said tray, with a perforation open of from 1/16 to 3/32 inch; said active surface portion of said tray being circumscribed by an imperforate peripheral portion with a width of from 0.05 to 0.35 times the radius of the tray, to prevent interference by said inner wall of said absorption column with vapor-liquid contacting above said active surface area portion of said tray;

means for flowing said vapor through said perforated portion at a velocity of from 50–133 ft./sec.; and a liquid discharge



downcomer means having a height measured from the main flat top surface of said tray of from $\frac{1}{4}$ to $\frac{3}{8}$ inch.

4,278,622

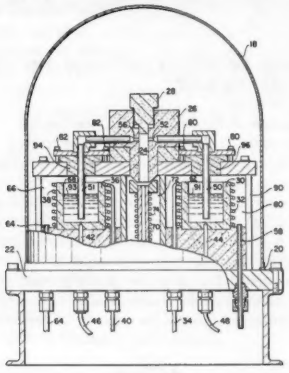
METHOD FOR FORMING METAL, CERAMIC OR POLYMER COMPOSITIONS

Nam P. Suh, Sudbury, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 78,320, Sep. 24, 1979, abandoned. This application Feb. 26, 1980, Ser. No. 124,694

Int. Cl.³ B01J *2/06*

U.S. Cl. 264—11 **19 Claims**



1. The process for forming a small grain size composition from at least two liquid streams, each of said streams selected from the group consisting of a polymer, a metal, a metal alloy, a ceramic and a mixture of a ceramic and a metal and/or a metal alloy wherein not more than one of said streams is a polymer, which comprises impinging said liquid streams upon each other to form a turbulent mixture having small eddies, each of said liquid streams having a Reynolds Number based on the nozzle diameter of at least about 50, and quickly freezing said mixture before substantial coalescence of the components of said stream.

4,278,623

ULTRA-FINE FIBERS AND METHOD FOR MAKING SAME

Walter D. Niegisch, Watchung, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 11, 1977, Ser. No. 758,424

Int. Cl.³ B29B *1/02*

U.S. Cl. 264—28 **9 Claims**

1. A method of shortening ultra-fine fibers having a length to diameter ratio sufficiently high to prevent forming a free-flowing, non-agglomerating slurry of such fibers in a liquid diluent into sufficiently short fiber lengths to allow formation of a free-flowing, non-agglomerating slurry which comprises placing ultra-fine fibers into a medium, immobilizing the medium to

embed the fibers therein and subjecting the immobilized fibers to shear at a rate and for a time sufficient to shorten the embedded ultra-fine fibers into lengths allowing formation of a free-flowing, non-agglomerating slurry.

4,278,624

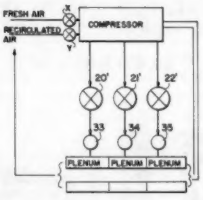
FLUID FILM CONTINUOUS PROCESSING METHOD AND APPARATUS

Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Filed Oct. 25, 1978, Ser. No. 954,448

Int. Cl.³ B29D *27/04;* **B65G** *53/02;* **B29C** *25/00*

U.S. Cl. 264—37 **66 Claims**



1. A method of processing a product with a fluid film, comprising the steps of:

providing a fluid under pressure;

providing a product to be processed by the fluid;

providing a confining wall having a general shape of the final desired shape of the product on one side;

passing the fluid through the confining wall to form a thin film fluid processing and bearing film on said one side of said confining wall;

controlling the characteristics of the fluid;

directly contacting the thin fluid film with the product immediately adjacent said confining wall to prevent direct contact between said product and said confining wall and further to directly process the product according to the controlled characteristics of the fluid;

monitoring the pressure of the fluid film and producing a corresponding pressure monitor signal;

providing a pressure reference signal;

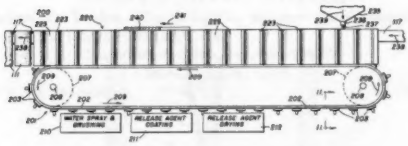
comparing the pressure reference signal with the pressure monitor signal and producing a correlated differential pressure signal; and

automatically varying the pressure of the fluid film in correlation to said pressure differential signal.

4,278,625
FIELD TRANSPLANT SYSTEMS AND METHODS AND COMPONENTS THEREOF

Richard R. Dedolph, Naperville, Ill., assignor to Gravi-Mechanics Co., Naperville, Ill.

Division of Ser. No. 772,094, Feb. 25, 1977, Pat. No. 4,130,072.
This application Jul. 28, 1978, Ser. No. 928,957
Int. Cl.³ B29D *27/04*; B29C *1/04, 23/00*
U.S. Cl. 264—39 **13 Claims**

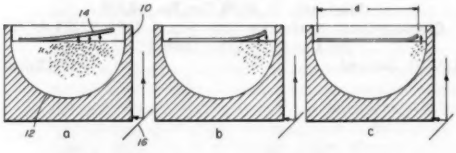


1. A method of forming polymerized soil plugs for growing plants therein comprising the steps of providing at least two sets of mold elements that when joined form a set of mold cavities, moving said sets of mold elements along a first path with said mold elements joined to form said set of mold cavities and thereafter moving said sets of mold elements along the second path wherein said mold elements are separated to facilitate the removal of molded soil plugs therefrom and to facilitate cleaning thereof, filling of each of said mold cavities along the first portion of said first path with a slurry of foam-forming synthetic organic resin and a quantity of particles of soil mix, separating said sets of mold elements at the exit from said first path to remove the molded soil plugs therefrom, cleaning said sets of mold elements during the first portion of movement along said second path, and thereafter applying a non-phytotoxic resin release agent at least to the surfaces of the mold elements forming said mold cavities.

4,278,626
METHOD OF CASTING PHOTOGRAPHS IN DOME-SHAPED STRUCTURES

Marin Atanasovski, 187 Harvard St., Malden, Mass. 02148

Filed Aug. 13, 1979, Ser. No. 66,015
Int. Cl.³ B29C *5/00*; B29D *3/00*
U.S. Cl. 264—40.1 **2 Claims**



1. A method of embedding a two dimensional pictorial display in a dome-shaped casting which includes in sequence:
(a) charging a dome-shaped transparent mold with casting material, the exposed portion of the material as charged forming the surface which the display will engage and through which the display will be viewed;
(b) contacting the surface of the casting with a portion of a planar display;
(c) monitoring the migration of gas from the casting;
(d) overlaying continually the display on the surface as the gas escapes from within the material, the display comprising more than 50% of the surface air of the casting;
(e) engaging the entire display to the surface when substantially all of the gas has escaped;
(f) charging subsequent to step (e) the mold with further casting material subsequent to the material charged in step (a) curing to embed the display in the casting and to form an integral casting;
(g) positioning said mirror adjacent to said mold;
(h) reflecting an image of the casting material on said mirror; and
(i) viewing the image reflected from said mirror as said overlying progresses.

4,278,627
EXPANDABLE STYRENE-MALEIC ANHYDRIDE COPOLYMER PARTICLES AND A PROCESS FOR MOLDING THE SAME

Mutsuhiko Kajimura, Moriyama, and Tetsuji Maeda, Nara, both of Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

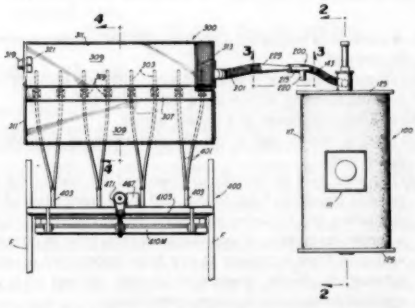
Filed May 2, 1980, Ser. No. 146,012
Claims priority, application Japan, May 7, 1979, 54/56047
Int. Cl.³ C08J *9/18*
U.S. Cl. 264—45.4 **3 Claims**

1. A process for preparing foamed article which comprises
(a) reacting, in an aqueous medium, particles of a styrene-maleic anhydride copolymer with a hydroxy compound having 2–4 active hydroxy groups and 2–15 carbon atoms in an amount of 2.5–150 mol% relative to the maleic anhydride moiety of said copolymer and further impregnating said copolymer of the resulting copolymer with a volatile blowing agent before, during or after the above reaction, to yield particles of an expandable styrene-maleic anhydride copolymer
(b) pre-expanding the expandable styrene-maleic anhydride copolymer particles under heating and
(c) molding the pre-expanded particles in a mold in which the particles are charged in an amount equal or up to 10% excessive to a volume of cavity, whereby foamed article having low density and good thermal stability is formed.

4,278,628
METHOD FOR PRE-EXPANDING AND MOLDING EXPANDABLE THERMOPLASTIC POLYMER PARTICLES

Robert L. Montgomery, and Stuart B. Smith, both of Conyers, Ga., assignors to Southeastern Foam Products, Inc., Conyers, Ga.

Continuation of Ser. No. 827,873, Aug. 26, 1977, abandoned.
This application Aug. 31, 1979, Ser. No. 71,532
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—45.5 **3 Claims**



1. A method for expanding and molding expandable thermoplastic polymer particles including the steps of: heating the walls of a substantially moisture-free tank, introducing a plurality of polystyrene beads that contain approximately 6% pentane gas and have a bulk density of 40 pcf into the heated substantially moisture-free tank by means of vacuum, pressur-

izing said polystyrene beads within said tank with hot dry air drawn from a source outside the heated substantially moisture-free tank to soften said beads without allowing expansion thereof, agitating and polystyrene beads within said tank, subjecting said polystyrene beads within said tank to a selected vacuum within the range of 15 to 20 ins. of Hg. to effect expansion of said beads to a selected desired density and to remove therefrom excess pentane gas, venting the tank to establish atmospheric pressure within said tank, discharging said expanded beads into a holding bin by means of suction, said beads being in a heated moisture-free state, introducing said expanded hot moisture-free polystyrene beads into a mold by passing said beads through feed lines extending between said holding bin and spaced pneumatic injection devices on the mold, fusing said expanded polystyrene beads into an integral mass by injecting steam into said mold from only one side thereof, cooling said fused polystyrene mass by introducing water onto the plates of the mold to form an outer skin on the fused polystyrene mass, and ejecting said fused polystyrene mass from said mold.

4,278,629

PREPARATION OF PADDED ARTICLES

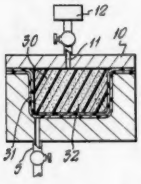
Peter S. Bennett, Morecambe, England, assignor to Storey Brothers and Company Limited, England

Continuation-in-part of Ser. No. 846,229, Oct. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 687,779, May 19, 1976, abandoned. This application Jun. 18, 1979, Ser. No. 49,710

Claims priority, application United Kingdom, May 27, 1975, 23086/75

Int. Cl.³ B29D *27/04*

U.S. Cl. 264—46.8 **4 Claims**



1. A method of preparing a resilient padded article comprising the steps of

(a) shaping a sheet of plasticized vinyl chloride polymer by vacuum forming to provide a shaped cover,

(b) holding said cover in a female mould,

(c) placing within said cover the precursors of a polyurethane foam,

(d) allowing said precursors to foam and fill said cover to provide a resilient foam filling, said foam being bonded to said cover and retaining said cover in the required shape, wherein the surface of said sheet which is to be in contact with said foam is treated at any time before step (c) and substantially in the absence of organic solvent with an aqueous primer composition comprising:

(A) a latex of butadiene-acrylonitrile copolymer containing a carboxyl group; and

(B) a latex chosen from the group consisting of natural rubber, styrene-butadiene latex and mixtures thereof in an amount sufficient to promote bonding and wherein the weight ratio of (A) and (B) is from 4:1 to 1:4, and the treated surface is dried.

4,278,630

METHOD FOR THE PREPARATION OF IMPLANTS, AND IMPLANTS

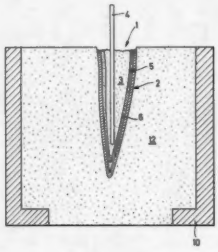
Hans Scheicher, Rondell Neuwittelsbach 4, 8000 München 19, Fed. Rep. of Germany

Filed Jan. 2, 1979, Ser. No. 629

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 2759214

Int. Cl.³ B29C *1/04*

U.S. Cl. 264—60 **11 Claims**



1. Method for the preparation of implants from ceramic substances, especially with a porous surface stimulating the ingrowth of bone tissues, comprising: introducing a model of the implant into a high-temperature embedding substance which has been mixed to a paste and leaving it in this until the embedding substance hardens thus producing a negative mold of the implant removing the model from the mold and lining the mold via an opening reaching into its interior with a layer of a ceramic substance which should form the outer layer of the implant, subsequently completely filling the cavity of the mold with dentine or core substances, sealing the opening with a high-temperature embedding substance which is mixed to a paste, drying the embedding substance, and heating the product to the sintering temperature of the ceramic substance used, and firing the ceramic substances at this temperature.

4,278,631

METHOD AND INSTALLATION FOR PRODUCING BRICKS

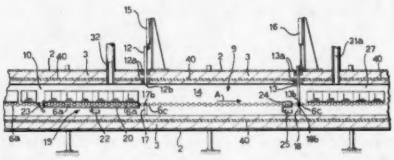
Antonio Salviati, Vicenza, Italy, assignor to Salviati Impianti S.p.A., Italy

Filed Aug. 17, 1979, Ser. No. 67,375

Claims priority, application Italy, Sep. 4, 1978, 27288 A/78

Int. Cl.³ F27B *9/12*; C04B *33/32*

U.S. Cl. 264—64 **27 Claims**



1. A method for producing bricks in a brick producing apparatus wherein said bricks are dried and fired in a single operating unit and wherein said bricks are transported through said unit, comprising the steps of:

preheating green bricks having a total moisture content of 13–15% to a wet-bulb temperature of 45°–100° C. in a co-current stream of hot gases having a predetermined moisture content;

drying said preheated bricks in a co-current stream of hot gases;

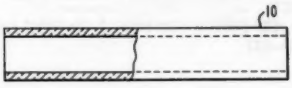
heating said dried bricks in preparation for firing;
firing said heated bricks; and
cooling said bricks, at least a portion of the gases from said heating step being utilized in drying said green bricks and at least a portion of the gases from said drying step being utilized in said preheating and said cooling steps, respectively.

4,278,632

METHOD OF CONFORMING CLEAR VITREOUS GEL OF SILICA-TITANIA MATERIAL

Bulent E. Yoldas, Churchill, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 8, 1980, Ser. No. 119,689
Int. Cl.³ C03C *3/04*
U.S. Cl. 264—66 **5 Claims**



1. The method of forming a monolithic clear vitreous member substantially comprising silica-titania binary which contains up to about 40 mole percent titania without melting the constituents used in forming the monolithic clear vitreous member, which method comprises:

(a) preparing as a precursor of one of said binary constituents a predetermined amount of clear solution of partially hydrolyzed alkoxide which prior to hydrolyzation is represented by the formula $M(OR)_4$ where M is one of silicon and titanium, R is alkyl with from 1 to 6 carbon atoms, the solution solvent comprises organic solvent for any metallic or metalloid alkoxide precursor and any partially hydrolyzed metallic or metalloid alkoxide precursor used in forming said silica-titania vitreous member, in the case M is silicon hydrolyzing water is present in amount of from about 1 mole to about 4 moles per mole of silicon alkoxide prior to hydrolyzation, and in the case M is titanium hydrolyzing water is present in amount of from about 1 mole to about 3 moles per mole of titanium alkoxide prior to hydrolyzation;

(b) adding to and reacting with said prepared solution a predetermined amount of precursor of the other of said binary constituents in the form of (1) a partially hydrolyzed clear solution of said other binary constituents which prior to hydrolyzation is represented by the formula $M'(OR)_4$ where M' is said other of silicon and titanium, R is alkyl with from 1 to 6 carbon atoms, the solution solvent comprises organic solvent for any metallic or metalloid alkoxide precursor and any partially hydrolyzed metallic or metalloid alkoxide precursor used in forming said silica-titania vitreous member, in the case M' is silicon hydrolyzing water is present in amount of from about 1 mole to about 4 moles per mole of silicon alkoxide prior to hydrolyzation, and in the case M' is titanium hydrolyzing water is present in amount of from about 1 mole to about 3 moles per mole of titanium alkoxide prior to hydrolyzation; or (2) alkoxide of said other binary constituents which is represented by the formula $M'(OR)_4$ where M' is said other of silicon and titanium and R is alkyl with from 1 to 6 carbon atoms; and including with at least one of said precursors a small amount of suitable mineral acid, and said predetermined amounts of said one binary precursor relative to said other binary precursor being such that the atom ratio of total combined titanium to total combined silicon is that molar ratio of titania to silica which is desired in the formed monolithic clear vitreous member;

(c) adding to the resulting reacted solution any additional water as required to complete the hydrolysis reaction of said titanium alkoxide and said silicon alkoxide, and allowing to stand until said reacted precursors form into a gel which is a clear, stiff, single phase containing a chemically formed glass network;

(d) conforming the gel into a member having a predetermined configuration, slowly drying the conformed member, and heating the resulting conformed and dried member at a temperature in the range of from about 400° C. to about 600° C. to evolve any residual organic components to produce a clear member; and

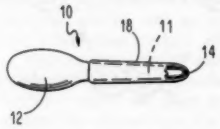
(e) sintering the resulting conformed clear member at a temperature below its melting temperature to form said monolithic clear vitreous member which has the predetermined configuration into which the gel is initially formed.

4,278,633

METHOD OF TREATING A WATER SOLUBLE CAPSULE

Akira Fujii, Cincinnati, Ohio, assignor to Stanley Drug Products, Inc., Portland, Oreg.

Continuation of Ser. No. 972,027, Dec. 20, 1978, abandoned, which is a continuation of Ser. No. 857,463, Dec. 5, 1977, abandoned, which is a continuation of Ser. No. 627,027, Oct. 30, 1975, abandoned. This application Dec. 10, 1979, Ser. No. 101,444
Int. Cl.³ A61M *3/00*
U.S. Cl. 264—134 **10 Claims**



1. A method of treating a water soluble gelatin capsule of the type used for supplying a material to a selected area of the body through a body orifice, said capsule having a soft deformable bulb portion and an elongated portion insertable through said orifice, said method comprising the steps of applying a hardening agent as a coating to a sufficient portion of the periphery of said elongated portion to provide a desired rigidity to said elongated portion for insertion through said orifice, said hardening agent being a mixture of polyethylene glycol-400 and polyethylene glycol-4000, which mixture does not flow at room temperature.

4,278,634

BICONSTITUENT ACRYLIC FIBERS BY MELT SPINNING

Maurice M. Zwick, Stamford, Conn., and William J. van Loo, Sarasota, Fla., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 18, 1980, Ser. No. 179,380
Int. Cl.³ D01D *5/22*
U.S. Cl. 264—168 **10 Claims**

1. A process for producing bicomponent acrylonitrile polymer fiber composed of two polymers of different acrylonitrile contents which comprises preparing a single-phase melt of a first fiber-forming acrylonitrile polymer and water, said first acrylonitrile polymer containing at least about 85 weight percent acrylonitrile and said melt being at a temperature above the boiling point of water at atmospheric pressure and at a pressure which maintains water in liquid state; preparing a pure melt of a second fiber-forming acrylonitrile polymer, said second acrylonitrile polymer containing from about 60–72 weight percent acrylonitrile, said pure melt being at the temperature and pressure of said single-phase polymer-water melt, and the difference in acrylonitrile contents of said first and said second acrylonitrile polymers being less than about 30 weight percent; extruding said single-phase polymer-water melt and said pure melt together through the orifices of a spinneret assembly directly into a steam pressurized solidification zone maintained under conditions which control the release of water from the nascent extrudate; and stretching the nascent

extrudate while it remains within said solidification zone to provide molecular orientation of said polymers.

4,278,635

METHOD FOR DEOXYGENATION OF WATER

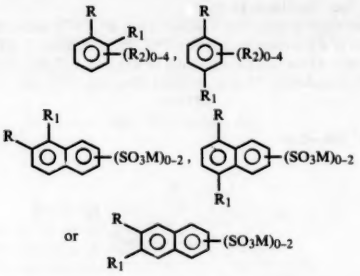
Herman Kerst, Des Plaines, Ill., assignor to Chemed Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 84,520, Oct. 12, 1979, abandoned. This application Dec. 26, 1979, Ser. No. 107,486

Int. Cl.³ C23F *11/06, 11/12, 11/14, 11/16*

U.S. Cl. 422—14 **5 Claims**

1. A method for control of corrosion of metal surfaces in a boiler system caused by dissolved oxygen in the water, which comprises adding to the said system an effective amount, from 0.1 to 20 parts by weight per part of the oxygen in the water of an oxygen scavenger selected from the group consisting of



in which R and R_1 are independently selected from the group consisting of —OH or $—NH_2$; R_2 (when present) is lower alkyl containing 1–8 carbons: M is H, Na, or K: and combinations thereof; said group member being the sole oxygen scavenger present.

4,278,636

CALIBRATING DEVICE FOR A BREATH ALCOHOL MEASURING INSTRUMENT

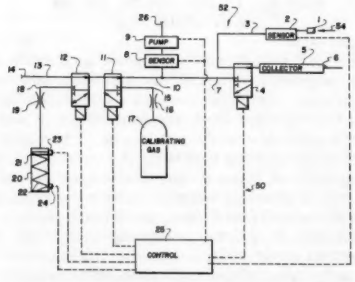
Günter Voigt, Bad Schwartau, and Rainer Boldt, Lübeck, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 15, 1980, Ser. No. 121,697

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1979, 2912181

Int. Cl.³ G01N *33/50, 1/22*

U.S. Cl. 422—84 **5 Claims**



1. A calibrating device for a breath-alcohol measuring instrument which includes a passage for the breathing air having a sensor for detecting alcohol therein and a collector in the passage arranged after the sensor and having an atmospheric discharge, comprising a connecting circuit, valve means in said circuit for selectively connecting the circuit to said passage, said circuit also including a member therein having a chamber, a piston wall movable in said chamber between two end positions, spring means biasing said piston wall member toward one end position, a calibrating gas supply connectable to said chamber on said one end of said piston, a sensor connected to said chamber on one side of said piston, and control means connected to said chamber and to said sensor and said valve means for selectively and alternatively connecting said sensor and said calibrating gas supply to said chamber and for connecting said circuit to said breathing gas passage.

4,278,637

CHEMICAL OXYGEN GENERATOR

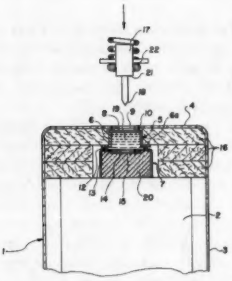
William S. McBride, Huntsville, Ala., assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,129

Claims priority, application Fed. Rep. of Germany, May 8, 1979, 2918417

Int. Cl.³ F01C *19/02;* **F03C** *2/00;* **F01C** *1/00*

U.S. Cl. 422—122 **5 Claims**



1. An improved chemical oxygen generator of the type having an outer container, an ignition mixture activatable by a liquid, means for enclosing the liquid, and starter means accessible from outside of the outer container for rupturing the enclosing means to release the liquid to ignite the ignition mixture, the improvement comprising an ignition mixture container in the outer container containing the ignition mixture, said ignition mixture container having an opening and a first foil sealingly overlying the opening, the outer container having an opening extending therethrough for passing the starter means, and wherein the enclosing means comprises a second foil fixedly connected to the inner wall surface of the outer container and sealingly overlying the opening of the outer container, and wherein said second foil is fixedly connected to said ignition mixture container and the liquid is contained intermediate said second foil and said first foil of the ignition mixture container.

4,278,638

GAS GENERATOR CONSTRUCTION

Karl E. Nilsson, Ottobrunn, and Armin Lampert, Aschheim, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Fed. Rep. of Germany

Filed Apr. 11, 1980, Ser. No. 139,359

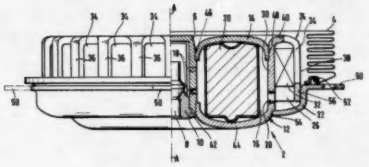
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915202

Int. Cl.³ B01J *1/00;* **B60R** *21/00*

U.S. Cl. 422—166 **7 Claims**

1. A gas generator particularly for the inflation of inflatable protective bags for safety systems of vehicles, comprising a tubular central part having an outer wall, an annular substantially S-shaped wall member having a bottom forming wall portion, an intermediate wall portion connected to the bottom forming wall portion, an outer casing wall portion, and a mid-

web wall portion connected between said outer casing wall portion and said intermediate wall portion, said bottom forming wall portion having an inner edge joined to the outer wall of said central tubular part, an annular cover member having respective radially inner and radially outer peripheral edges joined to said outer wall of said central tubular part and to said intermediate wall portion and enclosing a reaction chamber therebetween overlying said bottom forming wall portion, an outer cover ring extending between and joined to said outer



casing wall portion and said intermediate wall portion and enclosing a filter and expansion chamber therebetween, said outer casing wall portion having a plurality of outlet ports therein for the outflow of the generated gases, said intermediate wall portion having at least one opening therein communicating said reaction chamber with said filter and expansion chamber for the flow of reaction gases from the reaction chamber into the filter and expansion chamber and then through the outlet ports of said outer casing wall portion.

4,278,639

CATALYTIC CONVERTER FOR PURIFYING GASES

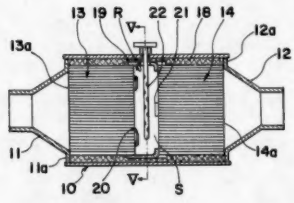
Tomoo Tadokoro, and Yasuo Honda, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Mar. 14, 1980, Ser. No. 130,445

Claims priority, application Japan, Mar. 19, 1979, 54-36420[U]

Int. Cl.³ B01D *53/36*; F01N *3/28, 3/30, 7/18*

U.S. Cl. 422—171 **4 Claims**



1. A catalytic converter for effecting purification of exhaust gases by catalytic reaction, which comprises, in combination:

a generally elongated casing having at one end an inlet for receiving the exhaust gases and at the other end an outlet for discharging the exhaust gases which have been passed through the casing;

at least two separate catalyst carriers of honeycomb type positioned in said casing and each having a plurality of parallel closely adjacent flow passages extending throughout the length thereof;

a spacer ring means between said catalyst carriers and connecting the catalyst carriers together in longitudinally spaced relation in a unitary structure, said spacer ring means being an annular spacer body having a cross-sectional shape similar to that of said catalyst carriers and a size for securing the ends of said catalyst carriers therein, and two sets of stop pawls each having at least two stop pawls protruding radially inwardly from the annular spacer body, one set adjacent each end of said spacer body, each stop pawl in a set being spaced inwardly from a corresponding end of said spacer body, said annular spacer body having the opposed ends of the adjacent catalyst carriers within said spacer body and abutting the pawls of the corresponding sets and holding the catalyst carriers in alignment with the longitudinal axis of the casing and retaining the catalyst carriers in position in the unitary structure; and

a heat-insulating and cushioning layer positioned in compressed sandwich fashion between the unitary structure and the casing and surrounding the unitary structure.

4,278,640

METHOD FOR SOLVENT EXTRACTION OF METALLIC MINERAL VALUES FROM ACIDIC SOLUTIONS

Hanceford L. Allen, Bartow, and William W. Berry, Lakeland, both of Fla., assignors to International Minerals & Chemical Corporation, Northbrook, Ill.

Filed Mar. 19, 1979, Ser. No. 22,218

Int. Cl.³ C01B *25/234*

U.S. Cl. 423—10 **11 Claims**

1. In a process for recovering metallic mineral values from an aqueous acidic solution obtained by processing an ore containing said values in admixture with other inorganic and/or organic constituents, which process includes the steps of mixing said aqueous acidic solution with an immiscible organic extractant to form a two-phase mixture, allowing said two-phase mixture to separate into a lighter phase and a heavier phase, said separated phases having an interfacial region therebetween, said interfacial region containing an accumulation of solid particles of impurities derived from the inorganic and/or organic constituents originally present in said ore or introduced by subsequent ore processing, the improvement comprising introducing air bubbles into said two-phase mixture to form a dispersion of bubbles which contact and adhere to said solid particles and cause said particles to rise to the surface of said lighter phase rather than accumulate in said interfacial region.

4,278,641

METHOD FOR EXTRACTING RHENIUM AND TUNGSTEN FROM WASTES OF RHENIUM-TUNGSTEN ALLOYS

Nikolov Y. Petrov; Maria M. Pavlova, and Ognyan D. Bojkov, all of Sofia, Bulgaria, assignors to Institute Po Obshta I Neorganichna Chimia, Sofia, Bulgaria

Filed Jan. 16, 1980, Ser. No. 112,451

Claims priority, application Bulgaria, Aug. 7, 1979, 44586; Nov. 28, 1979, 45707

Int. Cl.³ C01G *41/00, 47/00*

U.S. Cl. 423—49 **6 Claims**

1. A method of recovering rhenium and tungsten from wastes containing rhenium and tungsten alloys and of separating the two elements which comprises the following steps:

(a) electrochemically dissolving said wastes containing rhenium and tungsten alloys in substantially 4 to 5 normal sodium hydroxide to form a solution containing rhenium and tungsten;

(b) solvent extracting said solution containing rhenium and tungsten with an organic solvent capable of selectively removing rhenium from said solution thereby forming a second solution of said solvent containing the rhenium and leaving behind a raffinate containing the tungsten;

(c) distilling off the solvent from the second solution formed during step (b) to produce sodium perrhenate;

(d) converting the sodium perrhenate to ammonium perrhenate by ion exchange;

(e) adding sulfuric acid to the raffinate formed during step (b) to adjust the pH thereof to about 1; and

(f) extracting tungsten from the raffinate with a solution of trioctylamine in kerosene and octyl alcohol.

4,278,642

METHOD FOR REMOVING MOLYBDENUM FROM TUNGSTATE SOLUTIONS BY SOLVENT EXTRACTION

Martin B. MacInnis, and Tai K. Kim, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 38,974, May 14, 1979, abandoned, and a continuation-in-part of Ser. No. 952,419, Oct. 14, 1978, abandoned. This application Jun. 12, 1980, Ser. No. 158,670

Int. Cl.³ C01G *41/00*

U.S. Cl. 423—54 **1 Claim**

1. A process for separating molybdenum values from an aqueous solution containing molybdenum and tungsten values comprising the following steps:

(1) forming an aqueous solution comprising less than about five grams per liter sodium molybdate and from about fifty to about two hundred grams per liter sodium tungstate;

(2) sulfidizing said aqueous solution to form a sulfidized solution, said sulfidizing being carried out to an extent sufficient to convert substantially all of the sodium molybdate to sodium thiomolybdenum species, said sulfidizing being substantially less than the extent necessary to convert substantially all of said sodium tungstate to sodium thiotungsten species; and

(3) contacting said sulfidized solution at a pH of from about eight to about nine and one-half with a suitable amount of organic extractant for a sufficient period of time to preferentially extract greater than ninety percent of the sodium thiomolybdenum species into the organic extractant, said organic extractant consisting essentially of tricaprylyl monomethyl ammonia chloride as the active extractant and the balance being an organic solvent comprising a mixture of alkyl benzenes having total carbon atoms in the alkyl group of from three to five, said active extractant being present as a volume percent of total organic extractant in an amount less than about three percent by volume wherein said volume percent is selected to result in greater than ninety percent of the sodium thiomolybdenum species and less than about five percent of the sodium thiotungsten species present in said solution being extracted.

4,278,643

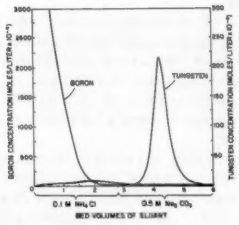
RESIN SORPTION PROCESS FOR EXTRACTING TUNGSTEN

Samuel Natansohn, Sharon, and Sophia R. Su, Wellesley, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 15, 1980, Ser. No. 186,949

Int. Cl.³ C01G *41/00*

U.S. Cl. 423—54 **9 Claims**



1. In a process for recovering tungsten values from a solution containing boron comprising the steps of contacting said solution with a resin comprising a copolymer of 8-hydroxyquinoline, a polyamine, resorcinol, and formaldehyde to load said resin with metal values; and desorbing the metal values from said loaded resin to recover the tungsten; the improvement comprises a two step desorption of metal values from said loaded resin including a first step of contacting said loaded resin with a solution of a weakly acidic salt to remove a portion of the boron from said loaded resin, followed by a second step of contacting said loaded resin with a solution of a weakly basic salt to remove a portion of the tungsten from said loaded resin, whereby the tungsten recovered by said improvement is substantially free of boron.

4,278,644

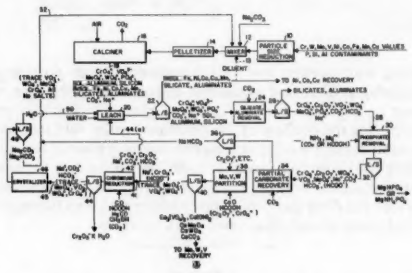
PROCESS FOR PARTITIONING Mo AND W FROM A MIXED $CaMoO_4$-$CaWO_4$ PRECIPITATE

Alkis S. Rappas, Bedford; Jameel Menashi, Lexington, both of Mass., and Donald A. Douglas, Amherst, N.H., assignors to Cabot Corporation, Kokomo, Ind.

Filed Apr. 15, 1980, Ser. No. 140,436

Int. Cl.³ C01G *39/00, 41/00*

U.S. Cl. 423—58 **18 Claims**



1. A process for partitioning Mo and W from a mixed precipitate comprising $CaMoO_4$ and $CaWO_4$, said process comprising the steps of

A. adding an acidic sulfate solution to said precipitate to produce $CaSO_4$, the amount of sulfate in said solution being sufficient to produce a sulfate concentration in said solution, in addition to sulfate contained in $CaSO_4$ precipitate, of at least about 3 moles per liter;

B. subjecting the slurry resulting from step A to a leaching operation below about 50° C. using a leach solution comprising at least about 3 moles per liter H_2SO_4 and sufficient H_2O_2 to complex the tungsten values in said slurry, said operation resulting in a solution containing Mo and W values;

C. separating solid $CaSO_4$ from the Mo and W containing solution;

D. heating the Mo and W containing solution to decompose peroxide complexes contained therein to result in precipitation of a tungstic acid product and;

E. separating the tungsten containing precipitate resulting from step D from the solution containing Mo.

10. A process for partitioning Mo and W from a mixed precipitate comprising $CaMoO_4$ and $CaWO_4$, said process comprising the steps of:

A. adding an acidic sulfate solution to said precipitate to produce $CaSO_4$ and to selectively dissolve Mo values, said acidic sulfate solution containing sufficient dissolved sulfate and bisulfate ion to precipitate the calcium and to result in an aqueous phase having a total sulfate ion concentration in the 4–10 moles/liter range;

B. separating a solid comprising a mixture of H_2WO_4 and $CaSO_4$ from the aqueous phase containing dissolved Mo values produced in step A;

C. recovering Mo values from the aqueous phase separated in step B.

D. treating the solid separated in step B with an acidic sulfate, H_2O_2 containing leach solution to selectively dissolve W values contained therein;

E. separating a solid $CaSO_4$ product from the aqueous solution produced in step D; and

F. recovering W values from the solution separated in step E.

4,278,645

METHOD OF PURIFYING HOT GASES

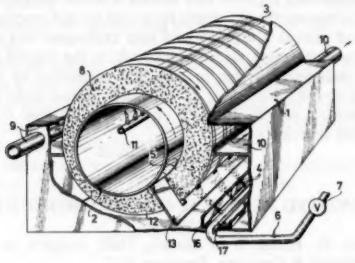
Peter Filss, Jülich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 888,002, Mar. 20, 1978, Pat. No. 4,214,881. This application Jan. 21, 1980, Ser. No. 113,615

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712216

Int. Cl.³ B01D *47/00*

U.S. Cl. 423—210 10 Claims



1. A method of purifying a hot gas, especially industrial waste gas, by means of rotatable plates arranged in axially spaced relationship to each other, which includes in combination the steps of:

spraying those surfaces of said plates which face each other with a liquid;

drying said sprayed-on liquid in dried condition on said plate surfaces to form thereon a solid substance layer;

reacting and combining said layer containing at least one substance that reacts and combines with at least one component being removed from said hot gas being purified, passing and purifying the hot gas between said plate surfaces as well as simultaneously rotating said plates to cause said reacting of at least one component to be removed from said hot gas to combine with the respective adjacent layer on said plates, and after said reacting of the respective solid substance layer with said gas being purified also removing at least a portion of said layer from the plates.

4,278,646

OXIDATIVE REMOVAL OF HYDROGEN SULFIDE FROM GASEOUS STREAMS

Scott Lynn, Walnut Creek, Calif., and Bernard J. Dubs, Berre l'Etang, France, assignors to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 891,545, Mar. 30, 1978, abandoned. This application Nov. 7, 1979, Ser. No. 92,041

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—226 34 Claims

1. A process for the removal of hydrogen sulfide from gaseous streams which comprises:

contacting a gaseous stream containing hydrogen sulfide with an aqueous solution of ferric ion chelated with an aminopolycarboxylic acid chelating agent at a pH of about 3.5 to 5, whereby hydrogen sulfide is oxidized to elemental sulfur and chelated ferric ion is reduced to chelated ferrous ion, the total concentration of ferrous and ferric iron in the aqueous solution being more than about 0.1 mole per liter of solution and the aqueous solution containing a salt selected from the group consisting of an ammonium salt of a strong mineral acid and an aliphatic, alicyclic, or heterocyclic primary or secondary amine salt of a strong mineral acid, said salt present in a sufficient proportion to maintain the thus formed chelated ferrous ion in solution.

4,278,647

PRODUCTION OF PHOSPHOROUS ACID

Klaus Jödden, Hürth; Hans-Werner Stephan, Cologne, and Gero Heymer, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,659

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833380

Int. Cl.³ C01B *25/16, 25/26*

U.S. Cl. 423—317 8 Claims

2. A process for making phosphorous acid which comprises saturating an aqueous sodium phosphite solution with hydrogen chloride and separating precipitating sodium chloride from the reaction product with the resultant formation of a phosphorous acid solution containing hydrochloric acid, said phosphorous acid solution being substantially free from sodium chloride, stripping said solution and recovering the phosphorous acid.

4,278,648

METHOD OF IMPROVING SILICEOUS FILTER AID DISPERSION IN WET PROCESS ORTHOPHOSPHORIC ACID PRODUCTION SYSTEMS

Harris G. Walton, Littleton, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Mar. 17, 1980, Ser. No. 130,874

Int. Cl.³ C01B *25/16*

U.S. Cl. 423—319 10 Claims

1. In a process wherein solid products of the reaction of sulfuric acid and phosphate rock dispersed in an aqueous acid medium are removed by filtration from said medium using a siliceous filter aid, and wherein said aqueous acid medium is at a temperature of at least 140° F., the improvement which comprises increasing the ability of the filter aid to disperse in said aqueous acid medium or to form a precoat by contacting said filter aid particles with water to adsorb on said particles 15 to 75 weight percent water based on the weight of the dry filter aid prior to dispersing said filter aid particles in said aqueous acid medium.

4,278,649

CONTINUOUS PROCESS FOR THE PRODUCTION OF AMORPHOUS SODIUM ALUMINOSILICATE IN AN ELONGATED REACTION ZONE

Peter Christophliemk, Dusseldorf, and Willi Wüst, Ratingen-Hoesel, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen and Deutsche Gold- und Silber-Scheideanstalt Vonmals Roessler, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Mar. 5, 1980, Ser. No. 127,383

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910152

Int. Cl.³ C01B *33/26, 33/28*

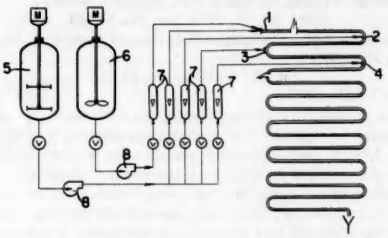
U.S. Cl. 423—329 10 Claims

1. A process for the continuous production of an aqueous, alkaline suspension of x-ray amorphous sodium aluminosilicate having a small particle size of at least 99% by volume of a particle size of less than 50μ, suitable for conversion into zeolite sodium aluminosilicate of the smallest particle sizes, by mixing an aqueous sodium aluminate solution with an aqueous sodium silicate solution in the presence of excess sodium hydroxide solution at a temperature in the range of from 20° to 103° C., where the solutions being mixed have a mathematical total molar ratio of:

1.5 to 9 Na_2O:1 Al_2O_3:1 to 7 SiO_2:40 to 400 H_2O

consisting essentially of the steps of continuously passing one of said two aqueous solutions into the entrance of an elongated substantially circular cross-sectional reaction zone having a

ratio of length to diameter of more than 500, continuously splitting the other aqueous solution into at least three partial streams, continuously passing the first of said partial streams into said entrance, continuously passing the mixed contents through said elongated reaction zone divided into a first zone where the mean holding time is from 5 to 60 seconds into a second zone of said elongated reaction zone, continuously



passing the remainder of said partial streams separately into downstream zones of said elongated reaction zone, where said mean holding time of the reaction mixture in each of said separate zones of said elongated reaction zone is at least 5 seconds and sufficient to effect substantial mixing of said contents, the mean holding time in the entirety of said elongated substantially circular cross-section reaction zone being at least 3 minutes.

4,278,650

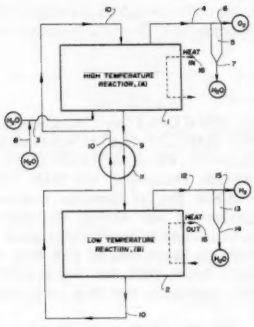
METHOD FOR PRODUCING OXYGEN AND HYDROGEN FROM WATER

William H. Dorrance, Ann Arbor, Mich., assignor to Organization Control Services, Inc., Ann Arbor, Mich.

Filed Mar. 24, 1980, Ser. No. 133,352

Int. Cl.³ C01B *1/08, 13/00*

U.S. Cl. 423—579 **9 Claims**



1. A method for producing O_2 and H_2 from water comprising:

flowing water as steam into contact with large-port hydrated mordenite contained in a first reaction vessel, said mordenite having an Si/Al ratio of from 5 to 30 and containing metal cation in a high oxidation state and selected from the group consisting of Cu, Cr, V, Fe, Co, Ni, Ho, Pm, Yb, Eu, In, Tl, U, Ti Ru and Rh, the temperature in said first reaction vessel being above 500° C. and the pressure in said first reaction vessel being above 150° psia and sufficiently high to prevent dehydration of said mordenite, thereby to cause a reaction of said water with said mordenite which generates O_2 and which converts said mordenite to a solid product containing substantially the same number of moles of water of hydration as in said mordenite prior to said reaction and containing the metal cation in a lower oxidation state;

withdrawing O_2 from said first reaction vessel;

withdrawing said solid reaction product from said first reaction vessel and passing it through a heat exchanger and then into a second reaction vessel, the pressure in said second reaction vessel being above 150 psia and sufficiently high to prevent dehydration of said solid reaction product, and the temperature in said second reaction vessel being below 400° C. and being at least 200° C. less than the temperature in said first reaction vessel thereby to cause a reaction which generates H_2 from said solid reaction product and which converts said solid reaction product to said mordenite containing the metal cation in its high oxidation state;

withdrawing H_2 from said second reaction vessel; and

withdrawing the mordenite from said second reaction vessel and passing it through said heat exchanger into said first reaction vessel, said mordenite from the second reaction vessel being heated in said heat exchanger by the heat removed in said heat exchanger from said solid reaction product passing through said heat exchanger from said first reaction vessel.

4,278,651

SUPPORTED RECEPTOR AND USE THEREOF IN AN ASSAY

Richard H. Hales, West Jordan, Utah, assignor to Becton Dickinson & Company, Paramus, N.J.

Filed Sep. 27, 1978, Ser. No. 946,064

The portion of the term of this patent subsequent to Aug. 22, 1995, has been disclaimed.

Int. Cl.³ G01N *33/48*; G01T *1/00*

U.S. Cl. 424—1 **33 Claims**

7. A supported receptor for use in an assay for a ligand, comprising:

a particulate support including an imprevious non-porous core, and an outer porous coating, said particulate support having a water insoluble polymer coating adhering thereto, said water insoluble polymer coating including at least one functional group selected from the group consisting of carboxyl, isothiocyanate, N-hydroxysuccinimide, imidazolide, bromoacetyl, maleimide and diazomethylene, and a receptor for binding the ligand being covalently linked to the support through said functional group.

4,278,652

PROCESS FOR DETERMINING FERRITIN

Elfriede Niemann, Kriftel, Fed. Rep. of Germany; Brian H. Stagg, Bletchley, and Stuart I. Cowan, Marston Mortaine, both of England, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 26, 1978, Ser. No. 954,897

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748657

Int. Cl.³ G01N *33/48*; A61K *43/00*; G01T *1/00*

U.S. Cl. 424—1 **2 Claims**

1. A process for the determination of ferritin in serum or in plasma, which comprises incubating an antibody directed against a first organ-specific isoferritin, which is covalently bound to polyamide 6,6, on the one hand with ferritin standard solutions containing an isoferritin identical with or different from that employed for the production of the antibody, and on the other hand with serum samples under the same conditions, decanting or aspirating the incubation solutions, washing the polyamide 6,6-isoferritin specific antibody-ferritin complex formed and subsequently incubating it with a ^{125}I-labelled antibody directed against a second organ-specific isoferritin, decanting or aspirating the solution, washing the polyamide 6,6-antibody-ferritin anti-body-^{125}I complex formed in which the antibodies are directed specifically against the isoferritins of different organs, counting its radioactivity in a gamma

counter and comparing the standard samples with the serum samples.

4,278,653

METHODS AND KITS FOR DOUBLE ANTIBODY IMMUNOASSAY PROVIDING A COLORED PELLET FOR EASY VISUALIZATION

S. Richard Harris, Needham, and Darlene K. Bonci, W. Boylston, both of Mass., assignors to New England Nuclear Corporation, Boston, Mass.

Filed Feb. 1, 1979, Ser. No. 8,267
Int. Cl.[3] G01N *33/56, 33/78*
U.S. Cl. 424—1 52 Claims

1. A method for performing an immunoassay, said method comprising:

reacting an antigen and a labelled version of said antigen with a first antibody for said antigen and said first antibody with a second antibody for said first antibody to precipitate a complex of said antigen, said first antibody and said second antibody, and

precipitating a colored protein to form a precipitate comprised of said complex and colored protein.

4,278,654

PROCESS FOR THE PREPARATION OF A STERILE INJECTABLE PHYSIOLOGICALLY ACCEPTABLE SOLUTION OF AN X-RAY CONTRAST AGENT AND SOLUTIONS OF THE X-RAY CONTRAST AGENT AND A BUFFER

Fridtjov B. Rakli, and Michael J. Kelly, both of Oslo, Norway, assignors to Nyegaard & Co. A/S, Oslo, Norway

Filed Jul. 3, 1979, Ser. No. 54,440
Claims priority, application United Kingdom, Jul. 4, 1978, 28764/78
Int. Cl.[3] A61K *49/04*
U.S. Cl. 424—5 10 Claims

1. A process for the preparation of a buffered sterile, injectable, physiologically acceptable solution of an X-ray contrast agent which comprises autoclaving a solution of a m-carboxamido-o-iodo-N-(β-hydroxyalkyl)-aniline X-ray contrast agent in the presence of a physiologically acceptable buffer which is selected from the group consisting of ammonia and a water soluble amine having a pKa of $\leqq$9.5 at 15° C. and which causes a decrease of the pH of the buffered solution with increasing temperature.

4,278,655

ANTIPERSPIRANT COMPOSITION

Steele J. Elmi, Midland Park, N.J., assignor to Finetex, Inc., Elmwood Park, N.J.

Filed Mar. 7, 1979, Ser. No. 18,250
Int. Cl.[3] A61K *7/32, 7/38*
U.S. Cl. 424—47 12 Claims

1. In an antipersipirant composition comprising an active antiperspirant salt, a particular suspending agent, and a liquid carrier, the improvement comprising wherein said liquid carrier comprises the benzoic acid esters of a mixture of linear primary alcohols in the C_9 to C_{15} carbon chain length range, said esters enabling increased suspension time and softer packing of settled matter following agitation of said composition, and a reduction in odor and in oily sensation when said composition is deposited upon the skin.

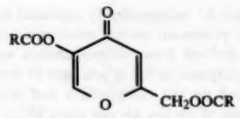
4,278,656

COSMETIC COMPOSITION CONTAINING KOJIC ACID ESTER

Sumiyoshi Nagai, and Tokio Izumi, both of Onojo, Japan, assignors to Sansho Pharmaceutical Co., Ltd., Onojo, Japan

Filed Jul. 18, 1979, Ser. No. 58,447
Claims priority, application Japan, Jun. 28, 1979, 54-82257
Int. Cl.[3] A61K *7/135, 7/42, 31/35*
U.S. Cl. 424—62 3 Claims

1. A method of whitening human skin comprising the steps of applying to said skin an effective skin whitening amount of an aqueous composition in the form of a lotion, cream, pack, or milk lotion comprising a diester of kojic acid having the formula



wherein R is an aliphatic group containing from 3 to 20 carbon atoms, said diester comprising from 0.01 to 10% by weight of said aqueous cosmetic composition and

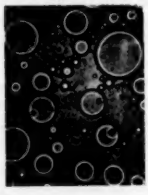
allowing said composition to whiten said skin.

4,278,657

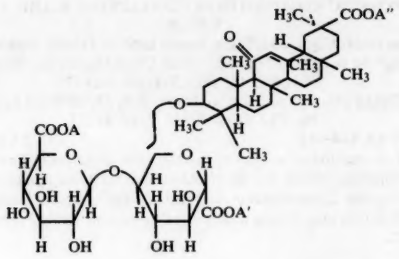
CREAMY OR MILKY SKIN COSMETIC COMPOSITIONS CONTAINING NATURAL MATERIALS AS EMULSIFYING AGENTS

Keizo Tezuka, Kaisei; Genichiro Okuyama, Odawara; Kazunobu Tokunaga, Odawara, and Yasuhisa Otani, Odawara, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Jun. 26, 1979, Ser. No. 52,263
Int. Cl.[3] A61K *7/00, 7/02, 7/02*
U.S. Cl. 424—63 8 Claims



1. A creamy or milky skin cosmetic composition of the oil-in-water emulsion type which consists essentially of an emulsifying agent, an oily substance and water, said oily substance consisting of from 10 to 70% by weight based on the composition and selected from the group consisting of higher aliphatic hydrocarbons, vegetable fats and oils, animal fats and oils, waxes, higher alcohols, higher fatty acids and ester oils, said water constituting from 30 to 90% by weight of the composition, and said emulsifying agent being composed of at least one naturally-occurring glycyrrhizic compound in amounts of from 0.01 to 20.0% by weight based on the composition and having the general formula



where A, A′ and A″ independently represent hydrogen atoms, sodium atoms, potassium atoms, ammonium radicals or cationic radicals derived from alkanol-amines and at least one water-soluble polysaccharide in amounts of from 0.1 to 10.0% by weight based on the composition and selected from the group consisting of pectin, karaya gum, locust bean gum and xanthan gum.

4,278,658

DEODORANT COMPOSITION

David C. Hooper, Ashford; George A. Johnson, and Donald Peter, both of Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,318

Claims priority, application United Kingdom, Jan. 13, 1978, 1479/78; May 16, 1978, 19842/78

Int. Cl.³ A61K *7/32*

U.S. Cl. 424—65 **12 Claims**

1. A deodorant skin treatment product comprising:

(i) from 0.01 to 20% by weight of a deodorant composition having a deodorant value of from 0.50 to 3.5 as measured by the Deodorant Value Test;

(ii) up to 99.9% by weight of a cosmetically acceptable vehicle for the composition; the deodorant composition comprising from 45 to 100% by weight of deodorant components, said components having a lipoxidase-inhibiting capacity of at least 50% or a Raoult variance ratio of at least 1.1, said components being classified into six classes consisting of:

Class 1: phenolic substances

Class 2: essential oils, extracts, resins and synthetic oils

Class 3: aldehydes and ketones

Class 4: polycyclic compounds

Class 5: esters

Class 6: alcohols,

provided that where a component can be classified into more than one class, it is placed in the lower or lowest numbered class;

said components being so selected that

(a) the deodorant composition contains at least five components of which at least one must be selected from each of class 1, class 2 and class 4;

(b) the deodorant composition contains components from at least 4 of the 6 classes; and

(c) any component present in the deodorant composition at a concentration of less than 0.5% by weight of said composition is eliminated from the requirements of (a) and (b).

4,278,659

HAIR SETTING AND BODYING COMPOSITION AND METHOD

Miklos M. Breuer, Rockville, Md., assignor to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 972,597, Dec. 22, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 83,137

Int. Cl.³ A61K *7/09, 7/11*

U.S. Cl. 424—71 **12 Claims**

1. A hair treating composition for imparting improved setting properties comprising an aqueous solution containing about 0.5 to 20% by weight of a mixture of glyceraldehyde, resorcinol and an oligomeric precondensate of glyceraldehyde and resorcinol said composition being prepared by heating an aqueous mixture containing glyceraldehyde, resorcinol and an acid selected from the class consisting of boric acid and silicic acid, the molar ratio of glyceraldehyde to resorcinol being about 19:1 to 1:19 and the molar ratio of glyceraldehyde to said acid being about 4:1 to 1:1.5.

4,278,660

COMPLEX OR SALT OF A PLATINUM (II) COMPOUND AND A NITROGEN CONTAINING POLYMER

Harry R. Allcock, State College; Robert W. Allen, University Park, and John P. O'Brien, State College, all of Pa., assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 792,608, May 2, 1977, Pat. No. 4,151,185. This application Nov. 9, 1978, Ser. No. 958,976

Int. Cl.³ A61K *31/74, 31/555, 31/28*

U.S. Cl. 424—78 **2 Claims**

1. A method of treating animal malignant tumor cells sensitive to cis-square planar platinum compounds in animals which comprises parenterally administering to an animal afflicted with said tumor cells a solution containing a complex or salt of the said cis-square planar platinum compound with a nitrogen container oligomer or polymer selected from the group consisting of polyphosphazenes, polyvinylpyridine and polyvinylpyrrolidone in an amount sufficient to cause regression of the animal tumor cells.

4,278,661

PURIFICATION OF INTERFERON

Ernest Knight, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 12, 1979, Ser. No. 84,632

Int. Cl.³ A61K *45/02*

U.S. Cl. 424—85 **7 Claims**

1. In a process for purifying biologically active serum-free human interferon comprising contacting an aqueous solution of impure serum-free human interferon with immobilized Cibacron Blue F3G-A, adsorbing the interferon on the Cibacron Blue F3G-A, and eluting the adsorbed interferon by washing the Cibacron Blue F3G-A with an eluting solvent to obtain a solution of purified interferon, the improvement which comprises:

(i) employing, as eluting solvent, an aqueous buffer solution containing 35 to 45 percent of ethylene glycol,

thereby obtaining interferon of greater than 95% purity,

(ii) obtaining the purified interferon as a mixture of monomer and dimer, and

(iii) contacting the purified interferon mixture with an organic thiol compound to convert dimer to monomer,

whereby all interferon activity resides in the monomer molecular weight fraction.

4,278,662

ATTENUATED INFLUENZA TYPE A VIRUS VACCINE

Michele Löbmann, Bierges, and Gerard Florent, Genval, both of Belgium, assignors to Smith Kline - RIT, Belgium

Filed Oct. 16, 1979, Ser. No. 85,437
Int. Cl.[3] A61K *39/145*
U.S. Cl. 424—89 2 Claims

1. A live influenza virus vaccine composition comprising an effective dose of the influenza virus CNCM No. I-099 strain (RIT 4265), prepared by recombination of the attenuated A/PR/8/34 influenza virus strain with the pathogenic A/California/10/78 (CNCM No. I-098) influenza virus strain, said novel attenuated influenza virus strain showing a heterogeneous constellation of its polymerase (P) genes versus the polymerase (P) genes constellation of its A/PR/8/34 and A/California/10/78 parent strains.

4,278,663

ANTIBIOTIC X-14868A, B, C AND D

Chao-Min Liu, Cedar Grove; Barbara Prosser, Bloomfield, and John Westley, Cedar Grove, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 30, 1980, Ser. No. 116,696
Int. Cl.[3] A61K *31/71*
U.S. Cl. 424—119 4 Claims

3. Antibiotic X-14868C having the following physical characteristics:

(1) an infrared spectrum as set forth in FIG. 3;

(2) a melting point of 172°–175° C. (Na salt);

(3) a specific rotation of

[α] D chloroform	methanol
+49.6°	+30.5° and

(4) a microanalysis of

%C	%H	%Na
57.13	8.58	2.36

4,278,664

PREVENTATIVE TREATMENT FOR *OTITIS EXTERNAE*

Jon S. Van Cleave, 3810 Thornwood Cir., West Des Moines, Iowa 50265

Continuation of Ser. No. 713,633, Aug. 12, 1976, Pat. No. 4,073,937. This application Feb. 6, 1978, Ser. No. 875,320
Int. Cl.[3] A61K *33/22, 33/40, 31/235*
U.S. Cl. 424—148 11 Claims

1. A composition for preventive treatment for swimmer's ear said composition comprising,

a pharmaceutically safe, liquid, non-ionic, substantially water insoluble aqueous surface tension reducing agent, in combination with an effective buffering amount of, a pharmaceutically safe non-skin irritating acidifying agent, and

a pharmaceutically acceptable medicinal agent which is non-irritating, in an amount which is effective to prevent said surfactant from providing a medium for bacterial growth.

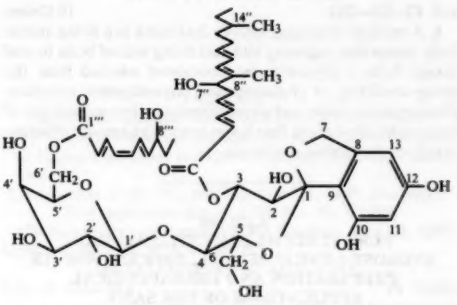
4,278,665

PAPULACANDIN DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Peter Traxler, Allschwil; Johannes Gruner, Flüh, and Jakob Nüesch, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 664,336, Mar. 5, 1976, abandoned. This application Oct. 21, 1977, Ser. No. 844,412
Claims priority, application Switzerland, Mar. 13, 1975, 3199/75; Oct. 3, 1975, 12857/75
Int. Cl.[3] A61K *31/71;* C07H *17/04*
U.S. Cl. 424—181 17 Claims

1. Papulacandin B of the formula



$C_{47}H_{64}O_{17}$ MW 900

5. A pharmaceutical preparation which comprises an antibiotically effective amount of a compound as claimed in claim 1 together with a pharmaceutical acceptable carrier.

4,278,666

NOVEL ORGANOSILICON COMPOUNDS AND ANTI-TRANSPLANTED TUMOR AGENTS CONTAINING THE SAME

Shigeshi Toyoshima, Funabashi; Ryuichi Sato, Gunma; Koichi Ito, Higashi-kurume; Toshio Shinohara, Annaka, and Yasushi Yamamoto, Takasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1980, Ser. No. 124,957
Claims priority, application Japan, Mar. 12, 1979, 54-28456
Int. Cl.[3] C07F *7/10;* A61K *31/725;* A01N *55/00;* A61K *31/695*
U.S. Cl. 424—184 13 Claims

1. A (trihydrocarbylsilylmethyloxyimino)alkane represented by the general formula

$$R^1{}_3Si—CH_2—O—N=Y,$$

where R^1 is a substituted or unsubstituted monovalent hydrocarbon group having from 1 to 10 carbon atoms and Y is a divalent hydrocarbon group denoted by $=CR^2R^3$ or $=CR^4$, R^2 and R^3, which may be identical or different, having the same meaning as R^1 defined above and R^4 being a divalent hydrocarbon group which forms a ring structure jointly with the carbon atom bonded to the nitrogen atom.

12. An anti-transplanted tumor agent which comprises a (trihydrocarbylsilylmethyloxyimino)alkane represented by the general formula

$$R^1{}_3Si—CH_2—O—N=Y,$$

where R^1 is a substituted or unsubstituted monovalent hydrocarbon group having from 1 to 10 carbon atoms and Y is a divalent hydrocarbon group denoted by $=CR^2R^3$ or $=CR^4$, R^2 and R^3, which may be identical or different, having the

same meaning as R^1 above and R^4 being a divalent hydrocarbon group which forms a ring structure jointly with the carbon atom bonded to the nitrogen atom, in a therapeutically effective amount with a pharmaceutical acceptable carrier.

4,278,667

METHOD OF TREATING TARDIVE DYSKINESIA BY ORAL DOSAGE FORM OF A PHYSOSTIGMINE COMPOUND

James B. Madison, Maryland Heights, Mo., and Larry K. Hiland, Edwardsville, Ill., assignors to Chromalloy American Corporation, St. Louis, Mo.

Filed Jun. 2, 1980, Ser. No. 155,479
Int. Cl.³ A61K *31/40, 31/625*
U.S. Cl. 424—232 **10 Claims**

1. A method of treating tardive dyskinesia in a living animal body comprising ingesting into said living animal body in oral dosage form a physostigmine compound selected from the group consisting of physostigmine, physostigmine salicylate, physostigmine sulfite and physostigmine sulfate at intervals of time not less than about four hours apart in an amount effective to relieve the tardive dyskinesia.

4,278,668

PURE 17 ALPHA-ETHYNYL(5 ALPHA), ANDROST-2-ENE,17 BETA-CL, PROCESS FOR ITS PREPARATION AND THERAPEUTICAL APPLICATIONS OF THE SAME

Nicolas Gueritee, 65 rue des Vignes, Paris, France (75016)

Continuation-in-part of Ser. No. 854,757, Nov. 25, 1977, abandoned. This application Jul. 16, 1979, Ser. No. 58,010
Int. Cl.³ A61K *31/56;* **A01N** *45/00*
U.S. Cl. 424—238 **7 Claims**

2. Method of treatment of endometriosis, comprising the administration of the 17 beta-acetate of pure 17 alpha-ethynyl (5 alpha), 2-androsten, 17 beta-ol at a daily dose of 100 to 300 mg.

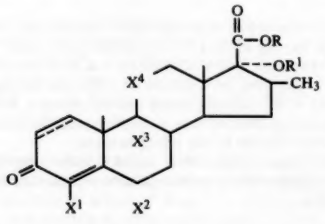
4,278,669

3-OXO-4-HALO-16β-METHYLANDROST-4-ENE 17β-CARBOXYLIC ACIDS AND ESTERS

Francisco S. Alvarez, Sunnyvale, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 893,643, Apr. 5, 1978. This application Aug. 29, 1979, Ser. No. 70,578
Int. Cl.³ A61K *31/56*
U.S. Cl. 424—243 **12 Claims**

1. A compound chosen from those represented by the formula



(I)

wherein
X^1 is fluoro or chloro;
X^2 is fluoro, chloro or hydrogen;
X^3 is fluoro, chloro, bromo or hydrogen;
X^4 is =C=O or

or;
R is hydrogen or alkyl of 1 through 6 carbon atoms;
R^1 is hydrogen or alkanoyl of 2 through 6 carbon atoms; and the solid and broken lines between C-1 and C-2 represent a double or a single bond.

12. A process for treating an inflamed condition in a mammal which comprises administering a therapeutically effective amount of the compound of claim 1 to said mammal.

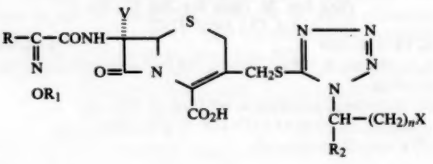
4,278,670

7-ALPHA-OXYIMINOACYLCEPHALOSPORINS

George L. Dunn, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Jul. 12, 1976, Ser. No. 704,159
Int. Cl.³ A61K *31/545;* **C07D** *501/56*
U.S. Cl. 424—246 **15 Claims**

1. An acid compound of the formula:



in which:
R is thienyl, furyl or phenyl optionally monosubstituted by hydroxy, halo, methoxy, nitro, ureido, methylthio or trifluoromethyl;
R_1 is hydrogen, lower alkyl, benzyl, phenethyl, thienylmethyl or furylmethyl;
R_2 is hydrogen or methyl;
n is selected from 0–9;
X is carboxy, carbamyl, N-methylcarbamyl or N,N-dimethylcarbamyl; and
Y is hydrogen or methoxy; or one of its nontoxic pharmaceutically acceptable alkali metal salt, amine salt or easily hydrolyzed ester derivatives.

11. A pharmaceutical composition having antibacterial activity comprising an effective but nontoxic quantity of a compound of claim 1 and a pharmaceutical carrier therefor.

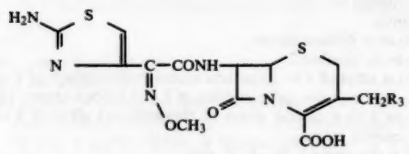
4,278,671

7-[2-(2-AMINOTHIAZOL-4-yl)-2-(SYN)-METHOXYIMINOACETAMIDO] CEPHALOSPORINS

Michihiko Ochiai, Suita; Akira Morimoto, Ikeda, and Yoshihiro Matsushita, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

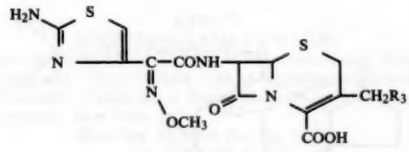
Continuation of Ser. No. 787,258, Apr. 13, 1977, abandoned. This application Aug. 8, 1979, Ser. No. 64,743
Claims priority, application Japan, Apr. 14, 1976, 51-42885; Sep. 8, 1976, 51-108102
Int. Cl.³ A61K *31/545;* **C07D** *501/46*
U.S. Cl. 424—246 **4 Claims**

1. A member selected from the group consisting of a 7-[2-(2-aminothiazol-4-yl)-2-(syn)-methoxyiminoacetamido]cephalosporin compound of the formula:



wherein R_3 is pyridinium or 4-carbamoylpyridinium, and a pharmaceutically acceptable salt or ester thereof.

2. An antibacterial composition which comprises (a) an antibacterially effective amount of a member selected from the group consisting of a 7-[2-(2-aminothiazol-4-yl)-2-(syn)-methoxyiminoacetamido]cephalosporin compound of the formula:



wherein R_3 is pyridinium or 4-carbamoylpyridinium, and a pharmaceutically acceptable salt or ester thereof in admixture with (b) a pharmaceutically acceptable excipient or diluent therefor.

4,278,672

PHARMACEUTICAL COMPOSITION AND METHODS OF USE CONTAINING 1,1,3,5-SUBSTITUTED BIURET COMPOUND

Hajime Fujimura, Kyoto; Yasuzo Hiramatsu, Otsu; Takahiro Yabuuchi, Takarazuka; Masakatu Hisaki, Hikone; Katsuo Takikawa, Naruto; Takaji Honna, Tokushima; Hidekazu Miyake, Tokushima, and Makoto Kajitani, Tokushima, all of Japan, assignors to Taiho Pharmaceutical Company, Limited, Tokyo, Japan

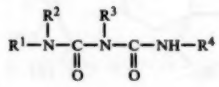
Filed Mar. 27, 1980, Ser. No. 134,555

Claims priority, application Japan, Mar. 31, 1979, 54/38792; Mar. 31, 1979, 54/38794

Int. Cl.[3] **A61K** *27/00, 31/40, 31/165, 31/445*

U.S. Cl. 424—248.4 **6 Claims**

1. A method of treating a patient requiring analgesia, said method comprising administering to patient an analgesic amount of a compound of the formula (1):



(1)

wherein R^1 is a lower alkyl group or a phenyl group; R^2 is a lower alkyl group, a phenyl group or a substituted phenyl group having chlorine atom(s), methyl group(s) or methoxy group(s) as the substituent(s), further R^1 and R^2 may form a single ring containing one or two hetero atoms including the adjacent nitrogen atom; R^3 is a hydrogen atom, a lower alkyl group or a phenyl group; R^4 is a phenyl group, a substituted phenyl group having halogen atom(s), trifluoromethyl group(s), methyl group(s), methoxy group(s), dimethylamino group(s), nitro group(s), hydroxyl group(s), acetyl group(s) or methylthio group(s) as the substituent(s), a benzyl group, a cyclohexyl group or a lower alkyl group; provided, however, that when R^1 is a lower alkyl group; R^2 is a lower alkyl group, a phenyl group, or a substituted phenyl group having chlorine atom(s) or methoxy group(s) as the substituent(s); or R^1 and R^2 form a single ring containing one or two hetero atoms including the adjacent nitrogen atom; and R^3 is a hydrogen atom, a lower alkyl group or a phenyl group; then R^4 is only a substituted phenyl group having hydroxyl group(s) as the substituent(s).

4,278,673

PHARMACOLOGICALLY ACTIVE COMPOUNDS

David Hartley, Ware, and Alexander W. Oxford, Royston, both of England, assignors to Allen & Hanburys Limited, London, England

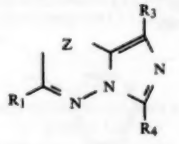
Continuation of Ser. No. 888,522, Mar. 21, 1979, abandoned. This application Sep. 4, 1979, Ser. No. 72,098

Claims priority, application United Kingdom, Mar. 25, 1977, 12598/77; Nov. 14, 1977, 47250/77

Int. Cl.[3] **C07D** *487/04;* **A61K** *31/415*

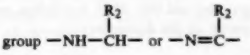
U.S. Cl. 424—249 **14 Claims**

1. A compound which is a imidazo[5,1-f]-1,2,4-triazine or a derivative thereof of the formula (I):



(I)

and physiologically acceptable salts thereof in which

Z represents a group  or

wherein R_2 represents a hydrogen atom or a straight or branched chain alkyl radical containing from 1 to 6 carbon atoms, or Z can additionally represent a group

and R_1, R_3 and R_4, which may be the same or different, each represent a hydrogen atom; a cycloalkyl group, said cycloalkyl group containing from 3 to 7 carbon atoms; a phenyl group which may optionally be substituted by one or more hydroxy, alkoxy or halogen radicals, said alkoxy radical containing from 1 to 4 carbon atoms; or straight or branched alkyl or alkenyl group, said alkyl group containing from 1 to 6 carbon atoms, said alkenyl group containing 2 to 6 carbon atoms, which alkyl or alkenyl group may be substituted with a phenyl group, which phenyl group may optionally be substituted by one or more hydroxy, alkoxy or halogen radicals, said alkoxy radical containing from 1 to 4 carbon atoms.

14. A method for the treatment of a patient suffering from a condition involving constriction of the bronchial muscle which comprises administering an effective amount of a compound as claimed in claim 1.

4,278,674

SUBSTITUTED 14-DESOXY-MUTILIN COMPOSITIONS

Helmut Egger, and Hellmuth Reinshagen, both of Vienna, Austria, assignors to Sandoz Ltd., Basel, Switzerland

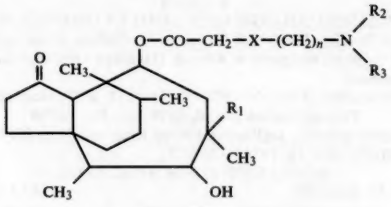
Division of Ser. No. 912,497, Jun. 5, 1978, Pat. No. 4,208,326, which is a division of Ser. No. 758,133, Jan. 10, 1977, Pat. No. 4,107,164, which is a division of Ser. No. 606,430, Aug. 21, 1975, Pat. No. 4,032,530, which is a division of Ser. No. 427,514, Dec. 26, 1973, Pat. No. 3,919,290, which is a continuation-in-part of Ser. No. 294,642, Oct. 3, 1972, abandoned. This application Nov. 29, 1979, Ser. No. 98,333

Claims priority, application Switzerland, Oct. 5, 1971, 14450/71; Oct. 5, 1971, 14451/71; May 25, 1972, 7738/72; May 25, 1972, 7739/72; May 25, 1972, 7740/72

Int. Cl.[3] A01N *37/36, 43/36, 43/60, 43/84*

U.S. Cl. 424—250 16 Claims

1. A pharmaceutical composition useful in treating bacterial infection comprising an antibacterial effective amount of a compound of the formula:

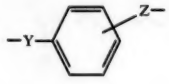


wherein

R_1 is ethyl or vinyl,

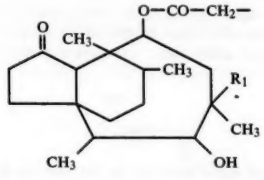
n is an integer from 2 to 5,

X is sulphur, a group



or a group $=N-R_4^I$,

wherein either Y and Z are both sulphur, or one of Y and Z is oxygen and the other is sulphur, and R_4^I is hydrogen or a group of the formula:



wherein

R_1 is as defined above,

each of R_2 and R_3 is alkyl of 1 to 10 carbon atoms, or

R_2 and R_3 together with the nitrogen atom is pyrrolidino, piperidino, morpholino, thiomorpholino, or 1-hexahydro-1H-azepino, or

R_2 and R_3 together with the nitrogen atom form a piperazinyl radical, the second nitrogen of which is substituted by a group R_5^I,

wherein R_5^I is alkyl of 1 to 5 carbon atoms or hydroxyalkyl of 1 to 4 carbon atoms, or

R_2 and R_3 together with the nitrogen atom form a piperazinyl radical, the second nitrogen atom of which is substituted by a radical R_5^{II},

whereby R_5^{II} is (alkanoyloxy of 2 to 5 carbon atoms) alkyl of 1 to 4 carbon atoms or (benzoyloxy) alkyl of 1 to 4 carbon atoms, or

wherein

R_1 is as defined above,

n is the number 2,

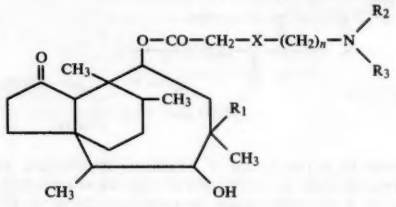
R_3 is alkyl of 1 to 10 carbon atoms, hydroxyalkyl of 1 to 4 carbon atoms, (alkanoyloxy of 2 to 5 carbon atoms) alkyl of 1 to 4 carbon atoms or (benzoyloxy) alkyl of 1 to 4 carbon atoms,

X is the group $=N-R_4^{II}$, and

R_2 together with R_4^{II} forms an ethylene bridge between both nitrogen atoms,

and pharmaceutically acceptable salts thereof, in association with a pharmaceutical carrier or diluent.

8. A method of treating bacterial infection in animals which comprises administering to an animal in need of such treatment an antibacterial effective amount of a compound of the formula:



wherein

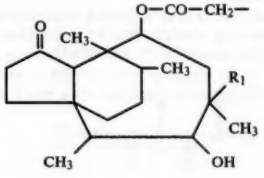
R_1 is ethyl or vinyl,

n is an integer from 2 to 5,

X is sulphur, a group

or a group $=N-R_4^I$,

wherein either Y and Z are both sulphur, or one of Y and Z is oxygen and the other is sulphur, and R_4^I is hydrogen or a group of the formula:



wherein

R_1 is as defined above,

R_2 and R_3 are independently alkyl of 1 to 10 carbon atoms, or

R_2 and R_3 together with the nitrogen atom is pyrrolidino, piperidino, morpholino, thiomorpholino, or 1-hexahydro-1H-azepine, or

R_2 and R_3 together with the nitrogen atom form a piperazinyl radical, the second nitrogen atom of which is substituted by a radical R_5^I,

wherein

R_5^I is alkyl of 1 to 5 carbon atoms or hydroxyalkyl of 1 to 4 carbon atoms, or

R_2 and R_3 together with the nitrogen atom form a piperazinyl radical, the second nitrogen atom of which is substituted by a radical R_5^{II},

whereby R_5^{II} is (alkanoyloxy of 2 to 5 carbon atoms) alkyl of 1 to 4 carbon atoms or (benzoyloxy) alkyl of 1 to 4 carbon atoms, or

wherein

R_1 is as defined above,

n is the number 2,

R_3 is alkyl of 1 to 10 carbon atoms, hydroxyalkyl of 1 to 4 carbon atoms, (alkanoyloxy of 2 to 5 carbon atoms) alkyl of 1 to 4 carbon atoms or (benzoyloxy) alkyl of 1 to 4 carbon atoms,

X is the group $=N-R_4^{II}$, and

R_2 together with R_4^{II} forms an ethylene bridge between both nitrogen atoms, and pharmaceutically acceptable salts thereof.

16. An animal feed or drinking water composition comprising a compound as defined in claim **1**, in free base or pharmaceutically acceptable salt form.

4,278,675

BRONCHODILATING PROCESS

Takayuki Naito, Kawasaki; Susumu Nakagawa, Tokyo; Tetsuro Yamasaki; Taka-aki Okita, both of Ichikawa, and Haruhiro Yamashita, Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed Sep. 13, 1979, Ser. No. 74,847

Int. Cl.[3] **A61K** *31/52*

U.S. Cl. 424—253 **3 Claims**

1. A bronchodilating method which comprises systemic administration to a mammal in need thereof an effective dose of from about 0.1 to 20 mg./kg. body weight of a compound selected from the group consisting of 9-cyclohexyl-9H-adenine, 9-benzyl-2-n-propoxy-9H-adenine and a pharmaceutically acceptable acid addition salt thereof.

4,278,676

HETEROCYCLIC COMPOUNDS

Povl. Krogsgaard-Larsen Allerod, Denmark, assignor to H. Lundbeck & Co. A/S, Copenhagen-Valby, Denmark

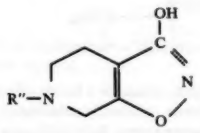
Filed Jun. 19, 1978, Ser. No. 917,118

Claims priority, application United Kingdom, Jun. 20, 1977, 25740/77

Int. Cl.[3] **C07D** *491/02;* **A61K** *31/435*

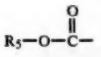
U.S. Cl. 424—256 **16 Claims**

1. Compounds of the general formula I



I

wherein R'' is hydrogen, acetyl or a group of the general formula VII



VII

wherein R_5 is C_{1-8} alkyl; phenyl; phenyl substituted in the 4-position with halogen, C_{1-4} lower-alkoxy, or C_{1-4} lower-alkyl; or phenyl-C_{1-4} alkyl in which the phenyl group may be substituted in the 4-position with halogen, C_{1-4} lower-alkoxy, or C_{1-4} lower-alkyl; and pharmaceutically-acceptable salts thereof.

6. A method for treating GABA system malfunction-related diseases in living animals by administering, to the animal, a therapeutically-effective GABA-system-affecting dose of a compound of the general formula I as defined in claim **1**, or a pharmaceutically-acceptable salt thereof.

4,278,677

TETRAHYDROPYRIDINYL INDOLES

Lucien Nedelec, Le Raincy; Jacques Guillaume, Sevran, and Claude Dumont, Nogent-sur-Marne, all of France, assignors to Roussel Uclaf, Paris, France

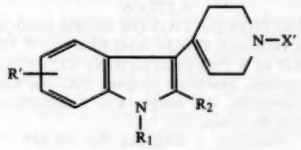
Filed Jan. 10, 1979, Ser. No. 2,453

Claims priority, application France, Jan. 16, 1978, 78 01083

Int. Cl.[3] **A61K** *31/445;* **C07D** *401/04*

U.S. Cl. 424—263 **39 Claims**

1. A compound selected from the group consisting of compounds of the formula



wherein R' is selected from the group consisting of hydrogen, halogen and alkoxy of 1 to 3 carbon atoms, R_1 and R_2 are individually selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms and X' is selected from the group consisting of alkyl of 1 to 6 carbon atoms, cycloalkyl of 4 to 7 carbon atoms, alkenyl and alkynyl of 2 to 5 carbon atoms and aralkyl of 7 to 12 carbon atoms with the proviso that when X' is methyl, at least one of R', R_1 and R_2 contain more than one carbon atom and when X' is benzyl, at least one of R', R_1 and R_2 must not be hydrogen and their non-toxic, pharmaceutically acceptable acid addition salts.

27. A method of treating psychic disorders in warm-blooded animals comprising administering to warm-blooded animals an amount of at least one compound of claim **1** sufficient to relieve psychic disorders.

4,278,678

SUBSTITUTED OXY-CYCLOHEXYLACETIC ACID DERIVATIVES

Yasuhiko Hamazaki; Kenji Seri; Nobuo Ishiyama; Toshiyuki Yamamoto; Masao Sakasai, and Reiko Sato, all of Tokyo, Japan, assignors to Kaken Chemical Co., Ltd., Tokyo, Japan

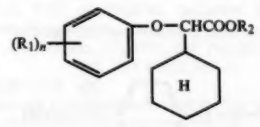
Filed Nov. 16, 1979, Ser. No. 94,950

Claims priority, application Japan, Dec. 1, 1978, 53-147746

Int. Cl.[3] **A61K** *31/44;* **C07D** *213/65;* **A61K** *31/19*

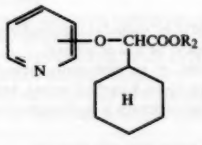
U.S. Cl. 424—263 **7 Claims**

1. A substituted oxy-cyclohexylacetic acid derivative having the formula



(I)

or



(III)

wherein n is 1 or 2; R_1 represents a halogen atom, trifluoromethyl, a lower alkyl, a lower alkoxy, a lower alkylcarbonyl, dimethylphenylmethyl, cyclohexyl, phenoxy or halogenophenoxy group, and two of R_1 groups can be bonded to form

an orthocondensed saturated alkylene ring; and R_2 represents a hydrogen atom or a lower alkyl group.

7. An antihyperlipidemic composition which comprises as an active ingredient, an antihyperlipidemically effective amount of a substituted oxy-cyclohexylacetic acid derivative having the formula (I) or (III) according to claim 1, in a pharmaceutically acceptable carrier.

4,278,679

COMBINATION OF TWO OR MORE DRUGS IN A SINGLE DOSAGE FORM WHEREIN ONE OF THE DRUGS IS A PHYSOSTIGMINE COMPOUND

James B. Madison, Maryland Heights, Mo., and Larry K. Hiland, Edwardsville, Ill., assignors to Chromalloy American Corporation, St. Louis, Mo.

Filed May 1, 1980, Ser. No. 145,431

Int. Cl.³ A61K *31/44, 31/40, 31/33, 31/46*

U.S. Cl. 424—263 **14 Claims**

1. A therapeutic composition comprising an antihistaminic drug selected from the group consisting of ethanolamine and alkylamine antihistaminic drugs which produce an anticholinergic effect combined in the same dose with a physostigmine compound selected from the group consisting of physostigmine, physostigmine salicylate, physostigmine sulfate and physostigmine sulfite in an amount effective to overcome the anticholinergic effect of the antihistaminic drug without inhibiting the antihistaminic effect.

4,278,680

HYPOGLYCAEMICALLY AND HYPOLIPIDAEMICALLY ACTIVE DERIVATIVES OF PHENYLACETIC ACID

Manfred Hübner, Ludwigshafen am Rhein; Hans Kühnle, Mannheim-Neuostheim; Ernst-Christian Witte, Mannheim; Ruth Heerdt, Mannheim-Feudenheim; Rudi Weyer, Frankfurt am Main-Unterliederbach, and Volker Hitzel, Lorsbach, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

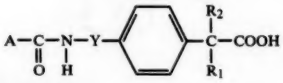
Division of Ser. No. 701,717, Jul. 1, 1976, Pat. No. 4,207,341. This application Dec. 10, 1979, Ser. No. 101,978

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1975, 2532420

Int. Cl.³ C07D *213/56, 215/40;* **A61K** *31/455*

U.S. Cl. 424—266 **7 Claims**

1. A phenylacetic acid derivative of the formula



wherein

A is a thienyl, pyridyl or quinolyl optionally substituted by halogen, lower alkyl or lower alkoxy,

Y is a valency bond or an optionally branched alkylene radical containing up to 3 carbon atoms, and

R_1 and R_2 each independently is hydrogen or a lower alkyl radical,

or a physiologically compatible salt thereof.

5. A hypolipidaemically active composition of matter comprising a hypolipidaemically effective amount of a compound according to claim 1 or a physiologically compatible salt thereof in admixture with a physiologically acceptable diluent.

4,278,681

ANTIBACTERIAL AMIDE COMPOUNDS AND MEANS FOR USING THE SAME

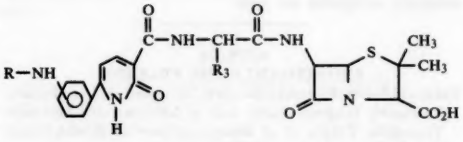
Theodore H. Haskell, Ann Arbor; Marland P. Hutt, Jr., Saline; Ernest D. Nicolaides, Ann Arbor; Peter W. K. Woo, Ann Arbor, and Gin G. Huang, Ann Arbor, all of Mich., assignors to Warner-Lambert Co., Morris Plains, N.J.

Continuation-in-part of Ser. No. 20,000, Mar. 12, 1979, abandoned. This application Jan. 31, 1980, Ser. No. 112,657

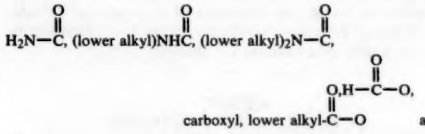
Int. Cl.³ A61K *31/455;* **C07D** *499/68*

U.S. Cl. 424—266 **39 Claims**

1. A compound of the formula

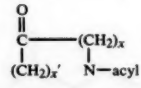


and pharmaceutically acceptable salts thereof; wherein R is



carboxyl, lower alkyl-C(=O)— amino,

or R_1-[NR_4-acyl]$_n$; x is an integer from one to five, x′ is zero, one or two; R_1 is hydrogen, lower alkyl, benzyl, or



wherein R_2 is hydrogen, amino or a lower alkyl group of from one to four carbon atoms, optionally substituted by from one to three chlorine or fluorine atoms; R_4 is hydrogen or lower alkyl; N-acyl is an aminoacyl moiety derived from a carboxylic acid of from two to ten carbon atoms optionally substituted by from one to three of the following groups, formamido, lower alkylamido, hydroxyl,

carbamido, carbonyl oxygen, lower alkoxy, lower alkylthio, or sulfonic acid; R_3 is phenyl, 4-hydroxyphenyl, 2-thienyl or cyclohexa-1,4-dien-1-yl and n is an integer of from one to four.

38. An antibacterial pharmaceutical composition comprising from 50 mg to 1000 mg of a compound of claim 1 and a pharmaceutical carrier.

4,278,682

VASODILATING METHOD OF TREATMENT USING A INDOLO-QUINOLIZINE-MONOESTER, DIESTER OR NITRILE

Csaba Szantay; Lajos Szabo; György Kalaus; Egon Karpati, and Laszlo Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 865,428, Dec. 29, 1977, Pat. No. 4,173,642. This application Apr. 2, 1979, Ser. No. 26,345

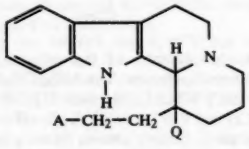
Claims priority, application Hungary, Dec. 30, 1976, RI 612

The portion of the term of this patent subsequent to Nov. 8, 1994, has been disclaimed.

Int. Cl.[3] A61K *31/445*

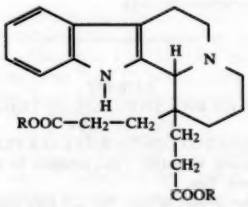
U.S. Cl. 424—267 5 Claims

1. A method of causing vasodilatation without CNS sedative effect which comprises administering to a mammalian subject an effective vasodilating amount of a compound of the formula



wherein Q is hydrogen or A—CH_2—CH_2— and A is cyano or $COOCH_3$, or a pharmaceutically acceptable acid-addition salt thereof.

5. A method of causing vasodilation without CNS sedative effect which comprises administering to a mammalian subject an effective vasodilating amount of a compound of the formula:



wherein R is C_1 to C_6 alkyl, or a pharmaceutically acceptable acid addition salt thereof.

4,278,683

SACCHARASE INHIBITING 3,4,5-TRIHYDROXYPIPERIDINE DERIVATIVES

Jürgen Stoltefuss, Haan; Lutz Müller, Wuppertal; Walter Puls, Wuppertal, and Rüdiger Sitt, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

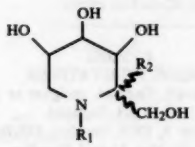
Filed Aug. 30, 1979, Ser. No. 71,347

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1978, 2839309

Int. Cl.[3] A61K *31/445*; C07D *211/46, 211/98*

U.S. Cl. 424—267 27 Claims

1. A 3,4,5-trihydroxypiperidine derivative of the formula



(I)

or a pharmaceutically acceptable salt thereof, in which

R_1 denotes a hydrogen atom, an amino group, an alkyl radical with 1 to 30 carbon atoms, an alkenyl or alkinyl radical with 2 to 18 carbon atoms, said alkyl, alkenyl or alkinyl radicals substituted by hydroxy, C_1–C_4-alkoxy, C_1–C_7-alkanoyloxy, phenylcarbonyloxy, trifluoromethyl, amino, C_1–C_4-alkylamino, C_1–C_4-dialkylamino, mercapto, C_1–C_4-alkylmercapto, halogen, C_1–C_4-alkylcarbonyl, carboxyl, nitro or cyano, phenyl or naphthyl; cycloalkyl, cycloalkenyl or cycloalkadienyl having 3 to 10 carbon atoms; or mono- or bi-cyclic carbocyclic aryl having 6 or 10 carbon atoms and

R_2 denotes a —$CH_2NR_3R_4$, —CH_2—NR_3—CO—R_4, —CH_2—NR_3—$CONR_4R_5$, —CH_2—NR_3—SO_2R_4, —CH_2—NR_3—SO_2—NR_4R_5, —CH_2—NR_3—CS—R_4, —CH_2—NR_3—CS—NR_4R_5, —COOH, —$CONH_2$, —$COOR_3$, —CO—NR_3R_4, —CH_2—OR_3, —CH_2—NH—$COOR_4$ or —CH_2—NH—$COSR_4$ group in which

R_3 denotes hydrogen or, independently of R_4, one of the meanings given for R_4, and

R_4 and R_5 independently denote hydrogen; C_1–C_{30}-alkyl; C_2–C_{18}-alkenyl; C_3–C_{10}-cycloalkyl; C_3–C_{10}-cycloalkenyl; C_3—C_{10}-cycloalkadienyl; C_1–C_{30}-alkyl or C_2–C_{18}-alkenyl substituted by hydroxy, C_1–C_4-alkoxy, C_1–C_4-carbalkoxy, carboxy or cyano; a mono- or bi-cyclic carbocyclic aryl radical with 6 or 10 carbon atoms; phenyl substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, nitro, trifluoromethyl or —$CH{=}CH_2COOC_2H_5$; or benzyl which is unsubstituted or substituted by methyl, methoxy, chlorine or nitro.

23. A method of combating arteriosclerosis, adiosity, diabetes and/or hyperlipaemia in warm-blooded animals which comprises administering to the animals an effective amount of an active compound according to claim 1 either alone or in admixture with a pharmaceutically acceptable diluent or in the form of a medicament.

4,278,684

NON-TOXIC ANTHELMINTHIC POUR-ON COMPOSITION

Guido J. L. Van der Veken, Turnhout, and Jozef C. J. Dockx, Vosselaar, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Filed Jun. 17, 1980, Ser. No. 160,248

Int. Cl.[3] A61K *31/425*

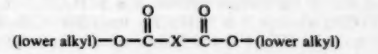
U.S. Cl. 424—270 19 Claims

1. A pour-on composition for combating helminthic infestations in a non-human animal, comprising:

a. an anthelminthically effective amount of dl-2,3,5,6-tetrahydro-6-phenylimidazo[2,1-b]thiazole and/or the laevo isomer thereof;

b. one or more aliphatic carboxylic acids, having each a pKa-value between 3 and 6, the molar ratio of the total amount of said carboxylic acids to the total amount of the anthelminthics varying between 0.01 and 3; and

c. an amount, varying from 10 to 70% by volume, of at least one di(lower alkyl) dicarboxylic acid ester of the formula



(II)

wherein X represents a direct bond or an alkylene radical having from 1 to 12 carbon atoms.

4,278,685

AMIDE DERIVATIVES

Terence J. Ward, Slough, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

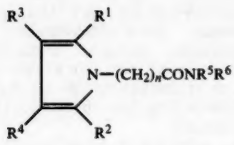
Filed Nov. 8, 1978, Ser. No. 958,762

Claims priority, application United Kingdom, Nov. 24, 1977, 48921/77

Int. Cl.³ C07D *207/34;* **A61K** *31/40*

U.S. Cl. 424—274 **7 Claims**

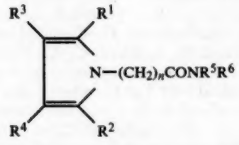
1. An amide of the formula



(I)

wherein R^1 and R^2 are each halogen, R^3 and R^4 are each hydrogen or lower alkyl, R^5 and R^6 are each hydrogen or lower alkyl and n is an integer of from 1 to 3 inclusive.

7. A pharmaceutical composition having antisecretory activity comprising an effective amount of an amide of the formula



wherein R^1 and R^2 are each halogen, R^3 and R^4 are each hydrogen or lower alkyl, R^5 and R^6 are each hydrogen or lower alkyl and n is an integer of from 1 to 3 inclusive, in association with a pharmaceutically acceptable carrier.

4,278,686

CARBAPENUM DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS AND INTERMEDIATES

David F. Corbett, Dorking, and Alfred J. Eglington, Betchworth, both of England, assignors to Beecham Group Limited, England

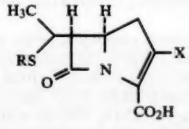
Filed Apr. 27, 1979, Ser. No. 33,825

Claims priority, application United Kingdom, May 6, 1978, 18101/78; May 30, 1978, 24358/78

Int. Cl.³ C07D *487/04;* **A61K** *31/40*

U.S. Cl. 424—274 **90 Claims**

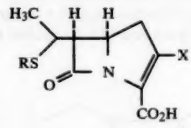
1. A compound of the formula (I):



(I)

a pharmaceutically acceptable salt thereof, or an ester which is convertible by chemical or biological means to the corresponding acid or salt thereof wherein X is $SCH_2CH_2NH_2$ or YNH.CO.CH_3 wherein Y is SCH_2CH_2, trans SO—CH=CH or cis or trans S—CH=CH and R is lower alkyl, phenyl unsubstituted or substituted by nitro, fluoro, chloro, bromo, lower alkyl or lower alkyloxy, lower alkyl substituted by phenyl which phenyl moiety is itself unsubstituted or substituted by nitro, fluoro, chloro, bromo, lower alkyl or lower alkyloxy, lower alkenyl or lower alkyl substituted by lower alkoxy, alkanoyloxy, lower alkyl esterified carboxyl, carboxyl, amino or lower alkylamide, or R is 2-benzyloxycarbonylaminoethyl, 2-p-nitrobenzyloxycarbonylaminoethyl, 2-p-methoxybenzyloxycarbonylaminoethyl, benzyloxycarbonylmethyl or p-nitrobenzyloxycarbonylmethyl.

31. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises an antibacterially effective amount of a compound of the formula (I):



(I)

a pharmaceutically acceptable salt thereof or an in vivo hydrozylable ester thereof, wherein X is $SCH_2CH_2NH_2$ or YNH-.CO.CH_3 wherein Y is SCH_2CH_2, trans SO-CH=CH or cis or trans S-CH=CH and R is lower alkyl, phenyl unsubstituted or substituted by nitro, fluoro, chloro, bromo, lower alkyl or lower alkyloxy, lower alkyl substituted by phenyl which phenyl moiety is itself unsubstituted or substituted by nitro, fluoro, chloro, bromo, lower alkyl or lower alkyloxy, lower alkenyl or lower alkyl substituted by lower alkoxy, lower alkanoyloxy, lower alkyl esterified carboxyl, carboxyl, amino or lower alkylamido, in combination with a pharmaceutically acceptable carrier, or R is 2-benzyloxycarbonylaminoethyl, 2-p-nitrobenzyloxycarbonylaminoethyl, 2-p-methoxybenzyloxycarbonylamino, benzyloxycarbonylmethyl or p-nitrobenzyloxycarbonylmethyl.

4,278,687

INHIBITION OF BIOSYNTHESIS OF TRIGLYCERIDES BY CERTAIN N-β-PHENETHYL-N-THIENYLALKYLAMINES

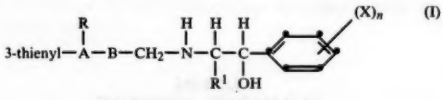
George R. Haynes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 117,160, Jan. 31, 1980, abandoned. This application Nov. 3, 1980, Ser. No. 202,997

Int. Cl.³ A61K *31/38*

U.S. Cl. 424—275 **1 Claim**

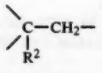
1. A method for inhibiting biosynthesis of triglycerides in swine which comprises administering, to a pig in need of such treatment, orally or parenterally, an effective amount of a compound of the formula:



(I)

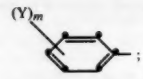
wherein

(a) the bridging fragment >A—B— is one of



and >C=CH—;

(b) R is 3-thienyl or



(c) R^1 is hydrogen or methyl;
(d) R^2 is hydrogen or hydroxyl;
(e) n is zero or one;
(f) X is alkyl, halogen or haloalkyl of one to three carbon atoms;
(g) m is zero or one;
(h) Y is alkyl of one to three carbon atoms, and their physiologically acceptable acid addition salts.

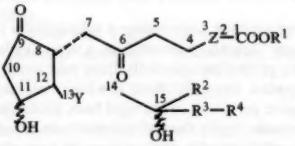
4,278,688

PROSTAGLANDIN ANALOGUES

Masaki Hayashi; Katsuichi Shimoji, both of Takatsuki, and Yoshinobu Arai, Toyonaka, all of Japan, assignors to Ono Pharmaceutical Co., Osaka, Japan

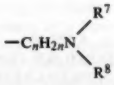
Division of Ser. No. 940,685, Sep. 9, 1978, Pat. No. 4,215,142. This application Jan. 16, 1980, Ser. No. 112,676
Claims priority, application Japan, Sep. 16, 1977, 52-110504
Int. Cl.³ A61K *31/557;* **C07C** *177/00*
U.S. Cl. 424—305 **8 Claims**

1. A prostaglandin E_1 analogue of the general formula:

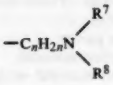


IV

wherein Y represents trans-vinylene, Z represents ethylene, R^1 represents a hydrogen atom, a straight- or branched-chain alkyl group containing from 1 to 12 carbon atoms, an aralkyl group containing from 7 to 12 carbon atoms, a cycloalkyl group containing from 4 to 7 carbon atoms in the ring and unsubstituted or substituted by at least one straight- or branched-chain alkyl group containing from 1 to 6 carbon atoms, a phenyl group unsubstituted or substituted by at least one chlorine atom, trifluoromethyl group, straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms or phenyl group, a $-C_mH_{2m}COOR^5$ group (wherein m represents an integer of from 1 to 12 and R^5 represents a hydrogen atom or a straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms), a $-C_nH_{2n}OR^6$ group (wherein R^6 represents a hydrogen atom or a straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms and n represents an integer of from 2 to 12) or a



group (wherein R^7 and R^8, which may be the same or different, each represent a hydrogen atom or a straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms and n is as hereinbefore defined), R^2 represents a hydrogen atom, R^3 and R^4 together represent 2-methylhexyl group, and the wavy line attached to the C-11 and C-15 carbon atoms represents α- or β-configuration or mixtures thereof and cyclodextrin clathrates of such acids and esters and, when R^1 represents a hydrogen atom or a group $-C_mH_{2m}COOR^5$ in which R^5 represents a hydrogen atom and m is as hereinbefore defined, non-toxic salts thereof and, when R^1 represents a group



in which n, R^7 and R^8 are as hereinbefore defined, non-toxic acid addition salts thereof.

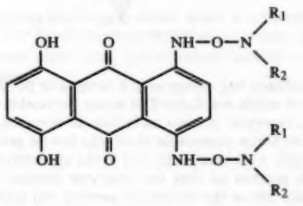
4,278,689

1,4-BIS(SUBSTITUTED-AMINO)-5,8-DIHYDROXY-ANTHRAQUINONES AND LEUCO BASES THEREOF

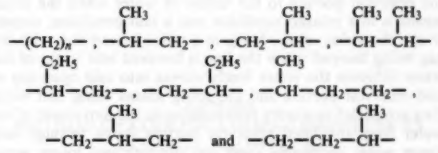
Keith C. Murdock, Pearl River, N.Y., and Frederick E. Durr, Ridgewood, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 923,602, Jul. 11, 1978, Pat. No. 4,197,249, which is a continuation-in-part of Ser. No. 873,040, Jan. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 824,872, Aug. 15, 1977, abandoned. This application Aug. 2, 1979, Ser. No. 63,285
Int. Cl.³ A61K *31/135*
U.S. Cl. 424—330 **29 Claims**

1. A pharmaceutical composition in dosage unit form comprising from about one to about 30 mg. of a compound selected from the group consisting of those of the formula:



wherein Q is a divalent moiety selected from the group consisting of those of the formulae:



wherein n is an integer from 2 to 4, inclusive; R_1 and R_2 are each individually selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms and monohydroxyalkyl having from 2 to 4 carbon atoms and wherein the carbon atom alpha to the nitrogen atom may not bear an hydroxy group with the proviso that R_1 and R_2 may not both be hydrogen or alkyl; and the pharmacologically acceptable acid-addition salts thereof; in association with a pharmaceutical carrier.

4,278,690

METHOD OF PRODUCING NUTRIENT FOOD BY FERMENTING WATER OATS WITH A *BACILLUS SUBTILIS*

Bunei Onodera, Harajukuribin 3F, 2-35-13, Jingumae, Shibuya-ku, Tokyo, Japan

Filed Aug. 31, 1979, Ser. No. 71,773
Claims priority, application Japan, Sep. 13, 1978, 53-111765
Int. Cl.³ A23B *7/02;* **A23L** *1/212*
U.S. Cl. 426—52 **6 Claims**

1. A method of producing a nutrient food from water oats, comprising:

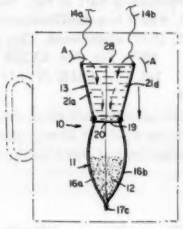
drying the water oats;
cutting the leaves, stalks or both leaves and stalks of water oats into small pieces;
steam boiling the cut pieces;
cooling the steam boiled material;
fermenting the cooled material with *Bacillus subtilis* ON-1; and
drying the fermented material.

4,278,691

COFFEE INFUSION BAG

Angelo Donarumma, 469-15 St., West Babylon, N.Y. 11704, and Thomas Callahan, 7 Cynthia La., East Islip, N.Y. 11730

Filed Mar. 17, 1980, Ser. No. 130,700
Int. Cl.³ B65B *29/02, 29/04*
U.S. Cl. 426—80 **10 Claims**



1. An infusion bag comprising a receptacle portion containing infusion solids and formed of water permeable sheet material, and a reservoir portion including an open top, side walls and a lower water permeable sheet, the lowest portion of said reservoir side walls being attached to the uppermost part of the receptacle portion so that the reservoir portion is disposed substantially above the receptacle portion and said water permeable sheet is disposed above and spaced from the infusion solids; the reservoir portion including fold means and string means attached to said uppermost part of the reservoir portion, said fold means and string means combining to open and close the reservoir portion to the inflow of water when the string means is in a relaxed condition and a taut condition, respectively, the string means being in a relaxed condition with the bag being buoyed when the bag is lowered into a cup of hot water wherein the water freely moves into said open top of said reservoir portion and the string means being taut when they are pulled upwardly thus assisting in the movement of the water from the filled reservoir portion down through said lower water permeable sheet and through said lower water permeable sheet and through the receptacle portion so as to extract a water soluble brew from the solids.

4,278,692

METHOD FOR INCREASING PREPARATION TOLERANCE OF A DRY MIX HAVING A GUM TO FORM AN OIL-AQUEOUS EMULSION

Robert R. Cassanelli; Ronald P. Wauters, both of Dover; Richard A. Cole, Clayton; David N. Evans, and Darrel E. Herbst, both of Dover, all of Del., assignors to General Foods Corporation, White Plains, N.Y.

Filed May 12, 1978, Ser. No. 905,306
Int. Cl.³ A23L *1/216*
U.S. Cl. 426—96 **13 Claims**

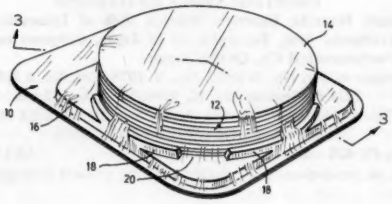
1. A method for increasing the preparation tolerance of a dry mix to form an oil-aqueous emulsion while obtaining a stable viscous emulsion which comprises:
manually mixing the dry mix with an aqueous solution and then an oil, the dry mix comprising an encapsulated gum and solids, the encapsulant being effective to retard hydration of the gum, the rate of hydration of the gum and the amount of gum being effective to provide a stable viscous emulsion for at least 24 hours after mixing, the solids being present in an amount effective to obtain a desired viscosity.

4,278,693

SHIPPER PACKAGE

Frank H. Dingethal, and Edward Bartosek, both of Kitchener, Canada, assignors to J. M. Schneider Inc., Kitchener, Canada

Filed Apr. 21, 1980, Ser. No. 142,091
Int. Cl.³ B65D *73/00, 5/50;* **B65B** *25/06*
U.S. Cl. 426—129 **3 Claims**



1. A shipper package comprising; a substantially rigid base having an upper face and a lower face, a support platform on the upper face projecting upwardly from said upper face and also being spaced inwardly from the circumferential edge around the entire periphery of the rigid base, a ridge projecting upwardly from the upper face of the platform defining a circumferential periphery of a product support area of the plaftorm, said ridge having an apex disposed above said upper face, a product mounted on said product support area inwardly from said ridge and projecting above said ridge, said ridge being interrupted at at least one point about the periphery to provide a peripherally extending gap in the ridge which extends to the surface of the platform whereby the full height of the product above the support area can be ascertained visually through said gap, said ridge being arranged and proportioned such that at least a portion of the ridge extends in each quadrant of the perimeter and a transparent vacuum-sealed wrapper enclosing the product and sealingly engaging the upper face of the base in a face to face relationship to form a continuous seal extending about the entire periphery outwardly from said apex of said ridge.

4,278,694

MODIFIED LIQUID SMOKE COMPOSITIONS AND FOOD CASINGS PREPARED THEREFROM

Herman S. Chiu, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 904,283, May 9, 1978. This application Sep. 7, 1979, Ser. No. 73,298
Int. Cl.³ A22C *13/00;* **A23L** *1/22*
U.S. Cl. 426—135 **35 Claims**

1. An aqueous liquid smoke composition comprising a uniform mixture of smoke coloring and flavoring constituents, and an amount of a water soluble alcohol solubilizing agent sufficient to prevent said smoke constituents from separating out, said composition having greater than about 15% by weight of said smoke constituents, and having a pH greater than about 4.

4,278,695

PREPARING BEVERAGE MIX CONTAINING DEXTROSE HYDRATE AND COATED CITRIC ACID

Violeta S. Velasco, Bolingbrook, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 965,827, Dec. 4, 1978, abandoned. This application Jan. 16, 1980, Ser. No. 116,981

Int. Cl.[3] A23L *1/221, 2/00*

U.S. Cl. 426—289 1 Claim

1. A method for preparing a dry, free-flowing beverage mix which comprises:

a. coating particles of citric acid with a powdered desiccating agent selected from the group consisting of silicon dioxide with a mean particle diameter of less than 50 millimicrons and sodium silicoaluminate with a mean particle diameter of less than 50 millimicrons; and

b. mixing the coated acid with a flavoring agent and a saccharide material containing from 5% to 25% by weight of dextrose hydrate, said saccharide material being sufficiently water soluble at room temperature to form a water solution containing at least about 10% by weight of dissolved solids, which beverage mix includes 1% to 6% by weight of citric acid and about 0.3% to about 2% by weight of the powdered desiccating agent.

4,278,696

DEACIDIFYING COFFEE EXTRACT WITH CHITOSAN

Daniele Magnolato, Chardonne, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Aug. 27, 1979, Ser. No. 69,712

Claims priority, application Switzerland, Sep. 14, 1978, 9638/78

Int. Cl.[3] A23F *5/18*

U.S. Cl. 426—422 6 Claims

1. A process for deacidifying a coffee extract which comprises contacting the coffee extract with chitosan in divided form and collecting the deacidified coffee extract after separation from the chitosan, wherein the caffeine content of the coffee extract is not affected by contact with the chitosan.

4,278,697

METHOD OF TRANSFERRING HEAT TO FOOD ARTICLES

Benno E. Liebermann, 2805 Lime Kiln La., Louisville, Ky. 40222

Division of Ser. No. 922,230, Jul. 5, 1978, Pat. No. 4,210,675, which is a continuation-in-part of Ser. No. 835,808, Sep. 22, 1977, Pat. No. 4,224,862. This application Dec. 5, 1979, Ser. No. 100,484

The portion of the term of this patent subsequent to Sep. 30, 1997, has been disclaimed.

Int. Cl.[3] A23L *1/00*

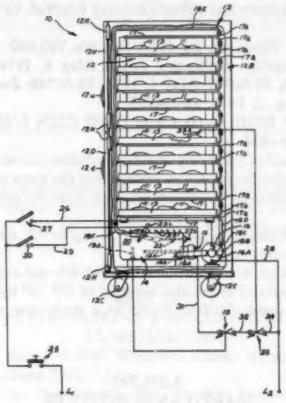
U.S. Cl. 426—506 3 Claims

1. A method of transferring heat to food articles comprising:

(a) supporting food articles on support means located within a chamber;

(b) mechanically forcing circulation of heated liquid water through radiator means at a flow rate of approximately one gallon per minute for transferring heat to the food articles, said radiator means being located in the upper portion of said chamber adjacent to and on opposite sides of said support means and being fluid-connected via hollow conduit means to sump means for containing said liquid water that are located in the lower portion of said chamber beneath said support means such that said liquid water is both withdrawn from and returned to said sump means by said circulation thereof, with the water being heated in said sump means;

(c) maintaining the humidity within said chamber above that of the atmosphere outside of said chamber by heating the water so as to produce water vapor in said sump and controlling the amount of water vapor that is first transferred from said sump means to said chamber and, subsequently, vented from said chamber to the atmosphere by operation of means for controlling flow through an opening that is provided between said sump means and said chamber and by operation of vent means provided for said chamber; and



(d) maintaining said heated liquid water at a temperature of within ±5° F. of a desired temperature by directly heating said liquid water with heater means located within said sump means.

4,278,698

METHOD OF COOLING COOKED PRODUCTS BY INTERVAL SHOWERING

Rudolf Maurer, 7752 Insel Reichenau in Bodensee, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,308

Int. Cl.[3] A23L *1/00*

U.S. Cl. 426—506 5 Claims

1. A method for cooling and conditioning a cooked product with the aid of a shower providing coolant, said product being initially at a substantially higher temperature than the coolant and being cooled to achieve a predetermined final temperature of its core, said method comprising the steps of:

turning on said shower for a predetermined active time interval calculated to cool the surface of the product by a predetermined amount and to withdraw insufficient heat from said product to reduce its core from said initial to said final temperature during a single active time interval;

turning off the shower for a sufficient inactive time interval to permit the surface of the product to dry and to be raised in temperature by heat transmitted from the core of the product, and

sequentially repeating the preceding steps for a number of repetitions calculated to reduce the core of the product to said predetermined final temperature.

4,278,699

METHOD OF PURIFYING DISTILLERS SOLUBLES AND USE OF THE PURIFIED MATTER

Kiyoshi Yoshizawa, Tokyo; Kikuo Nojiro, Machida; Masamitsu Itoh, Hatoyama; Hiroshi Kiuchi, Sayama, and Kazuo Horii, Otani-Omiya, all of Japan, assignors to National Tax Administration Agency and Kibun Company Limited, both of Tokyo, Japan

Filed Jan. 26, 1977, Ser. No. 762,680

Claims priority, application Japan, May 6, 1976, 51-50746; May 6, 1976, 51-50747; May 6, 1976, 51-50748; Jun. 17, 1976, 51-70428; Sep. 2, 1976, 51-104235

Int. Cl.[3] B21D *39/00;* C07G *17/00;* C12N *1/38, 1/20*

U.S. Cl. 426—624 4 Claims

1. A method of purifying distillers solubles unknown growth factor from distillers solubles comprising the steps of clarifying distillers solubles by treatment selected from the group consisting of

(1) a centrifugal separation to a degree of above 50,000 (g×minute) and

(2) a filtration with addition of a filter aid; and collecting the liquid parts of molecular weights of 10^3-10^5 by subjecting the obtained clarified liquid to a molecular sieve treatment.

4,278,700

MARZIPAN SUBSTITUTE

Roelof H. Barents, Poortugaal, Netherlands, and John B. Rossell, Loughton, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,582

Claims priority, application United Kingdom, Dec. 1, 1978, 46910/78

Int. Cl.[3] A23G *3/00*

U.S. Cl. 426—660 9 Claims

1. In an edible marzipan substitute plastic candy filling comprising a mixture of ground almonds and sugar wherein at least a portion of said almond constituent thereof is replaced by a replacement substituent, the improvement comprising:

the addition to said mixture of a vegetable fat wherein:

a. said fat is present in said mixture in an amount sufficient to promote bloom-resistance in couvetures applied thereto;

b. said fat has dilatations at 20° C. and 35° C. of at least 800 and at most 500 respectively; and

c. said fat is compatible with couvetures applied to said mixture;

the improvement providing an edible marzipan type plastic candy filling having improved bloom-resistance to couvetures applied thereto.

4,278,701

ANIMAL AND VEGETAL TISSUES PERMANENTLY PRESERVED BY SYNTHETIC RESIN IMPREGNATION

Gunther von Hagens, Jahnstr. 6, Heidelberg, Fed. Rep. of Germany (6900)

Continuation of Ser. No. 851,101, Nov. 14, 1977, Pat. No. 4,205,059. This application Nov. 8, 1979, Ser. No. 92,544

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 2710147; May 7, 1977, 2720607

The portion of the term of this patent subsequent to May 27, 1997, has been disclaimed.

Int. Cl.[3] A01G *5/06*

U.S. Cl. 427—4 15 Claims

1. A method of preparing a body consisting essentially of anhydrous animal or vegetal tissue and a water-insoluble synthetic resin substantially uniformly distributed in said tissue which comprises:

(a) replacing the water content of a water-bearing body of animal or vegetal tissue with an organic solvent volatile in a vacuum;

(b) holding said body bearing said solvent in contact with a fluid precursor composition in a vacuum until said solvent is volatilized and replaced in said body by said composition, said composition being capable of being polymerized into a solid, water-insoluble synthetic resin;

(c) removing adhering precursor composition from the surface of said body; and

(d) holding said body under polymerization conditions until said precursor composition in said body is cured to said solid resin.

4,278,702

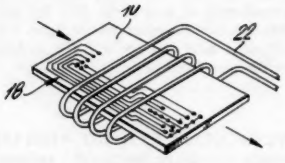
METHOD OF MAKING PRINTED CIRCUIT BOARD BY INDUCTION HEATING OF THE CONDUCTIVE METAL PARTICLES ON A PLASTIC SUBSTRATE

Cheng-Yih Jenq, Piscataway, N.J., assignor to Anthony J. Casella, East Williston, N.Y.; a part interest.

Filed Sep. 25, 1979, Ser. No. 78,687

Int. Cl.[3] H05K *3/12*

U.S. Cl. 427—45.1 5 Claims



1. A method of making a printed circuit board comprising the steps of:

placing a strip of powdered material onto a dielectric plastic substrate wherein said powdered material includes conductive metal particles having a melting point higher than said plastic substrate; and

heating said powdered material by induction at a frequency sufficient to sinter said conductive metal particles but for a duration less than sufficient to cause said plastic substrate to deform due to the heat emitted from said metal particles and transmitted to said plastic substrate by conduction thereby securing the strip to the dielectric plastic substrate and forming a conductive pathway.

4,278,703

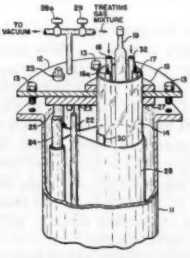
METHOD AND MEANS FOR PRODUCING FLUOROCARBON FINISHES ON FIBROUS STRUCTURES

Madeline S. Toy, Palo Alto; Roger S. Stringham, Woodside, and Lawrence C. Fogg, Sunnyvale, all of Calif., assignors to Science Applications, Inc., La Jolla, Calif.

Filed Aug. 20, 1979, Ser. No. 68,110

Int. Cl.[3] B05D *3/06*

U.S. Cl. 427—54.1 8 Claims



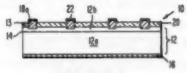
1. A method for imparting an improved finish to a fibrous textile material or the like while retaining the identity of the material, comprising contacting a web of said material with a

gaseous medium containing from about 5% to about 10% of a fluoroolefin gas comprising bromotrifluoroethylene as its major component and from about 90% to about 95% of an inert diluent gas, and while so contacted, subjecting said web to ultraviolet radiation under controlled conditions by moving the latter from a supply roll thereof along a cylindrical path toward a takeup roll therefor, said cylindrical path being spaced about 40 mm from an elongated ultraviolet lamp located substantially at the axis of said path and having an output of about 200 watts per inch of length, and maintaining the temperature of said web within the range of about ambient to about 200° C., said web movement being such as to expose said web to ultraviolet radiation from said lamp for from about 200 to about 500 seconds during traversal of said cylindrical path by said web, thereby to cause photografting and chemical bonding between the fluoroolefin in said gaseous medium and the fibers of said material effective to impart said improved finish to said material.

4,278,704
METHOD FOR FORMING AN ELECTRICAL CONTACT TO A SOLAR CELL

Brown F. Williams, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 30, 1980, Ser. No. 116,790
Int. Cl.³ B05D *3/02, 3/10*
U.S. Cl. 427—75 **16 Claims**



1. A method of forming an electrical contact to the surface region of a silicon semiconductor device without punching through said region, said device having a body of one conductivity type with opposed major surfaces and a region in said body at one of said major surfaces of opposite conductivity type to said body forming a rectifying junction in said body between said region and said body and means for electrically contacting the major surface opposite to said region, comprising:

depositing a sufficient amount of a metal onto said region wherein said metal upon heating will form a silicide with said region to a predetermined depth of penetration into said region;

heating said device to a sufficient temperature and for a sufficient time to form said metal silicide to the predetermined depth in said region; and

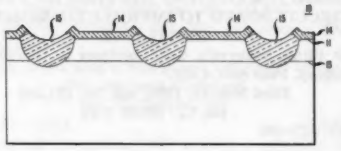
oxidizing the surface of said region not containing said silicide.

4,278,705
SEQUENTIALLY ANNEALED OXIDATION OF SILICON TO FILL TRENCHES WITH SILICON DIOXIDE

Jorge Agraz-Guerena, Hanover Township, Northampton County; Lewis E. Katz, and Bernard L. Morris, both of Allentown, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 8, 1979, Ser. No. 92,523
Int. Cl.³ H01L *21/316, 21/324*
U.S. Cl. 427—93 **5 Claims**

1. In the fabrication of silicon integrated circuits made in silicon chips which utilize trenches filled with silicon oxide to provide dielectric isolation between different surface portions of the chip, the process of filling the trenches in the silicon chip with silicon oxide which comprises heating the silicon chip, which has been masked to leave exposed the trenches while covering the surface between the trenches, in a relatively strong oxidizing ambient to fill partially the trenches with silicon oxide, annealing the chip in an ambient in which any

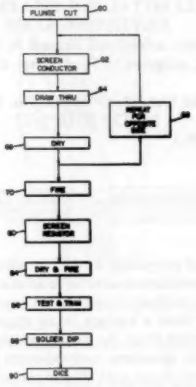


oxide growth is insignificant for a time to relieve stresses in the chip, and repeating the heating and annealing steps until the trenches are substantially filled and planarity is essentially restored to the chip.

4,278,706
METHOD FOR MAKING DISCRETE ELECTRICAL COMPONENTS

Richard L. Barry, North Attleboro, Mass., assignor to TRX, Inc., Attleboro Falls, Mass.

Division of Ser. No. 860,862, Dec. 15, 1977, Pat. No. 4,199,745.
This application May 29, 1979, Ser. No. 43,439
Int. Cl.³ H01C *17/06*
U.S. Cl. 427—96 **5 Claims**



1. A process for fabricating a multiplicity of discrete electrical circuit components comprising the steps of forming a series of through apertures in a substrate,

depositing thick film paste conductor material on one surface of said substrate to form spaced conductor portions, applying a pressure differential across said substrate to draw said deposited conductor material along walls of said apertures to form connector portions extending toward the opposite surface of the substrate,

depositing further thick film paste electrical conductor material on said opposite surface of said substrate and then applying a pressure differential across said substrate to draw said further conductor material along walls of said apertures towards said one substrate surface to form spaced terminal pads on said opposite substrate surface corresponding to spaced conductor portions on said one substrate surface and connector strips electrically connecting corresponding conductor portions and terminal pads, and

dicing said substrate such that the edge surfaces of said spaced conductor strips are not disturbed and only sub-

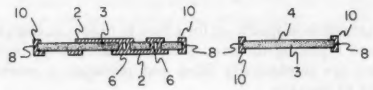
strate material is removed in said dicing step to form said multiplicity of discrete electrical circuit components.

4,278,707

METHOD FOR COATING THE EDGE OF A PRINTED CIRCUIT BOARD TO IMPROVE ITS MOISTURE RESISTANCE

Joseph Biran, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 19, 1980, Ser. No. 151,010
Int. Cl.³ H05K *3/28*
U.S. Cl. 427—96 **2 Claims**



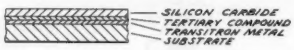
1. A method for manufacturing printed circuit boards having fibers therein comprising the steps of:
defining conductive traces on a non-conductive board;
sizing the non-conductive board to expose raw fibers at the periphery of the board; and then
coating the periphery of the board to seal the periphery and to prevent moisture penetration into the board.

4,278,708

CONDUCTIVE CORROSION RESISTANT MATERIAL AND ALKALI METAL/POLYSULFIDE BATTERY EMPLOYING SAME

Mati Mikkor, Ann Arbor, and Samuel S. Shinozaki, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 31, 1979, Ser. No. 89,818
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—126.1 **7 Claims**



1. A method of preparing an article which is electronically conductive, but resistant to corrosive attack by molten polysulfide salts, which method comprises (1) providing a metal substrate having at least a surface layer thereon of a transition series metal selected from the group consisting of chromium, titanium, niobium, tantalum, molybdenum and zirconium, (2) coating said surface layer with silicon carbide particles have an average particle diameter ranging between about 0.1 and about 0.5 microns, (3) pressing said silicon carbide particles into contact with said transition series metal layer so as to provide greater contact therebetween, and (4) heating said substrate having said surface layer and layer of silicon carbide thereon in an inert atmosphere to a temperature of between about 1000° C. and about 1300° C. for a sufficient time to allow diffusion to occur between said silicon carbide and said transition series metal layer, thereby forming a layer of a tertiary compound comprising silicon. silicon carbide and said transition series metal.

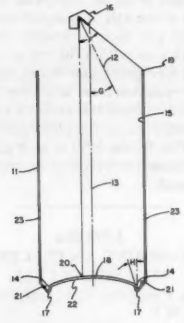
4,278,709

METHOD OF APPLYING WATER SOLUBLE INTERNAL COATING TO HOT CANS

Richard W. Sullivan, Denver, and Robert N. Warwick, Arvada, both of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Oct. 25, 1979, Ser. No. 88,228
Int. Cl.³ B05D *7/22*
U.S. Cl. 427—233 **3 Claims**

1. In a method for applying an internal coating to a hot light-weight can having an inner frustoconical surface at an angle of between 0 and 30 degrees, comprising the steps of, rotating said can, directing a coating composition onto the interior surface of said can, and curing said coating composition on said interior surface, wherein the improvement comprises, directing a composition including water and epoxy onto the interior surface of the can wherein said composition has a



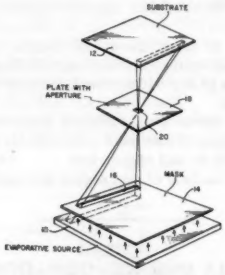
viscosity of between 22 and 16 seconds when measured at 77 degrees F., in a number 4 Ford cup and wherein said can has a temperature of over 140 degrees F., and the additional step of allowing said coating composition to flow outwardly along the bottom of said can thereby coating the inner frustoconical surface, said allowing step to be performed prior to said curing step.

4,278,710

APPARATUS AND METHOD FOR SUBMICRON PATTERN GENERATION

Edward C. Jelks, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1979, Ser. No. 69,654
Int. Cl.³ C23C *11/00, 13/00*
U.S. Cl. 427—250 **10 Claims**



8. A method of depositing submicron patterns on a substrate comprising the steps of:
evaporating molecules from a source of metal opposite the substrate so that the molecules of metal will be directed toward the substrate;
interposing a mask with an open pattern between the source of metal and the substrate so that molecules of metal will be directed through the open pattern toward the substrate; and
further interposing a plate with a small aperture between the mask and the substrate so that all metal molecules have to pass through said aperture,

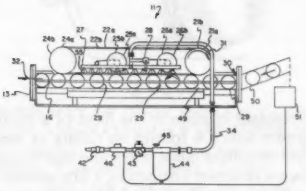
whereby metal molecules will be deposited directly on the substrate in the pattern of the openings on the mask.

4,278,711

APPARATUS AND METHOD FOR THE LUBRICATION OF CANS

Richard W. Sullivan, Denver, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Jan. 14, 1980, Ser. No. 112,011
Int. Cl.³ B05D 1/02, 3/12
U.S. Cl. 427—284 **26 Claims**



20. A method of depositing a fluid on a narrow circumferential strip at one end of a cylindrical article comprising the steps of: advancing and rotating the article through a treating zone; supplying pressurized air to an atomizer; producing a mist of airborne fluid particles with said atomizer; transporting said airborne fluid particles by a moving air stream through a hollow member to a conduit; directing said moving air stream carrying said airborne fluid particles toward and to said cylindrical article through a plurality of outlets along the length of said conduit and facing said cylindrical article; and depositing said fluid particles on said cylindrical article while advancing and rotating, whereby, said moving air stream travels from said atomizer to and through said conduit and through a plurality of outlets in said conduit toward and to said cylindrical article thereby depositing said fluid particles on said cylindrical article.

4,278,712

METHOD FOR ACTIVATING NON-NOBLE METAL COLLOIDAL DISPERSION BY CONTROLLED OXIDATION FOR ELECTROLESS PLATING

Thomas G. Thomann, Trenton, N.J., assignor to Surface Technology, Inc., Princeton, N.J.

Continuation of Ser. No. 938,438, Aug. 31, 1978, abandoned.
This application Jun. 28, 1979, Ser. No. 52,857
Int. Cl.³ C23C 3/02
U.S. Cl. 427—304 **19 Claims**

1. A process for the metallizing of a non-conductor substrate by electroless (chemical) metal deposition comprising the steps of:

(1) contacting said substrate with an activated colloidal dispersion comprising of non-noble catalytic metal capable of electroless plating initiation and wherein said metal may be part of an alloy or elemental state and mixtures thereof and wherein said activated colloidal dispersion is prepared by the admixing of a chemical oxidizing agent with a weakly active stable colloidal dispersion and wherein said admixing is carried forth in a manner of achieving a controlled oxidation and thereby producing the activated colloidal dispersion, and

(2) contacting the treated substrate with an electroless plating bath for the deposition of a metal.

4,278,713

POLYVINYL CHLORIDE PLASTISOLS

Christian Burba, Ascheberg-Herbern; Hans-Guenter Volland, Unna, and Norbert Esper, Bergkamen, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 115,567
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906134
The portion of the term of this patent subsequent to Apr. 24, 1996, has been disclaimed.
Int. Cl.³ B05D 3/02
U.S. Cl. 427—388.2 **8 Claims**

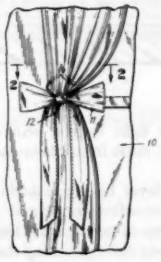
3. A method for protectively coating a substrate which comprises applying to said substrate a coating of a plastisol containing a vinyl chloride polymer and then baking the coating at a temperature from 100° C. to about 200° C., said plastisol further comprising from about 0.1 to about 4.0 percent, by weight of said plastisol, of a Schiff base containing from 0.05 to 1.0 azomethine groups per 100 grams of compound and further containing a uretidine dione or isocyanurate group in the molecule.

4,278,714

BOW CONSTRUCTION

Herbert S. Schwartz, Raleigh, N.C., assignor to Croscill Curtain Co. Inc., New York, N.Y.

Filed Dec. 10, 1979, Ser. No. 102,190
Int. Cl.³ D04D 7/10
U.S. Cl. 428—4 **3 Claims**



1. A bow construction for gathering the vertical length of a curtain or drapery which comprises:

a horizontal strip which is essentially rectangular in appearance;

a vertical strip, the strip being abutted against the front of the horizontal strip and knotted therebehind, whereby the ends of the vertical strip hang downwardly below the horizontal strip and the central portion of the horizontal strip is compressed so that the appearance is that of a bow; and

the horizontal strip has depending therefrom at least two ribbons, the ribbons having detachable hook means at the ends thereof to be received on a support member to properly and positively locate the bow construction along the vertical length of the curtain or drapery.

4,278,715

PRESERVATION OF GREEN PLANT TISSUES

Cesar Romero-Sierra, Bath, and John C. Webb, Kingston, both of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Filed Jul. 30, 1979, Ser. No. 61,688
Claims priority, application Canada, Aug. 18, 1978, 309654
Int. Cl.³ A01N 3/00; C09K 15/06
U.S. Cl. 428—22 **18 Claims**

1. A solution, for the preservation of naturally green co-

loured plant tissues, consisting essentially of 30%–70% by volume water; at least one monohydric alcohol; at least one preservative component selected from the group comprising lower carboxylic acids, and di- and tri-hydric alcohols; and sufficient buffering and mordant reagents to control the pH and osmolality of said solution so as to permanently retain said green colour in said tissues.

4,278,716

LIGHT WEIGHT PACKAGE CONTAINER MADE FROM MULTI-LAYER MATERIAL

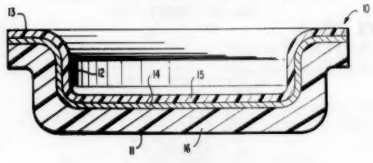
Norbert Buchner, Tamm, and Dieter Liede, Möglingen, both of Fed. Rep. of Germany, assignors to Robert Bosch Verpackungsmaschinen GmbH, Waiblingen, Fed. Rep. of Germany

Continuation of Ser. No. 794,482, May 5, 1977, abandoned, which is a continuation of Ser. No. 655,569, Feb. 5, 1976, abandoned, which is a continuation of Ser. No. 457,435, Apr. 3, 1974, abandoned. This application Oct. 5, 1979, Ser. No. 82,205

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1973, 2316513

Int. Cl.³ B65D *1/34;* B32B *15/08*

U.S. Cl. 428—35 **12 Claims**



1. A deep-drawn light weight, semi-rigid, dent-resistant, packaging container, made from a laminated sheet, comprising in combination:

(a) an aluminum layer having a thickness in the range of from one grain to a few grains; and

(b) at least one layer of polymeric plastic material, which is biaxially stretched before forming the laminated sheet, to increase the yield strength of the polymeric material, and has an elongation before fracture of 15–50%, said polymeric material being selected from a group consisting of polypropylene, polyamide and polyester, and being laminated to said aluminum layer for providing stretchability, strength and stability, the total thickness of said at least one layer of polymeric material being substantially greater than that of said aluminum layer.

11. A deep-drawn light weight, semi-rigid, dent-resistant, packaging container, formed from a laminated sheet having a stretch capability of up to 50% elongation without rupture, said laminated sheet comprising:

a first layer of polymeric plastic material selected from the group consisting of polypropylene, polyamide and polyester, which is biaxially stretched before forming the laminated sheet to increase the yield strength of the polymeric material, and which has an elongation before fracture of 15–50%;

a second layer of aluminum, which has a thickness in the range of from one grain to a few grains, and which is laminated to said first layer; and

a third layer of synthetic material which has a low tendency to return to its state before forming, selected from a group consisting of impact-resistant polystyrene, acrylic butadiene styrene, and polyvinyl chloride, which has a thickness substantially greater than said aluminum layer, and which is laminated to said aluminum layer.

4,278,717

HEAT RESISTANT CUSHION

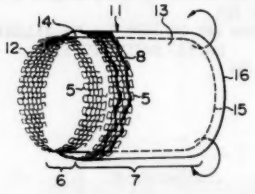
Toshiho Aoyama, Nagoya, Japan, assignor to Chuo Hatsujo Kabushiki Kaisha, Aichi, Japan

Filed May 21, 1979, Ser. No. 40,781

Claims priority, application Japan, May 19, 1978, 53-60393

Int. Cl.³ B32B *7/00, 7/04, 15/00*

U.S. Cl. 428—36 **11 Claims**



1. A heat resistant cushion in the form of a compact of a toroidal structure which is formed by rolling an annular network structure of knitted metal wires into said toroidal structure, the network structure comprising a first annular segment which forms the outer covering of the toroidal structure after said rolling said a second annular segment which forms the inner part of the toroidal structure after said rolling, said second segment containing axially spaced yarns of an inorganic fiber which extend circumferentially of the network structure and which are supported by engagement with selected loops of the metal wires which form said second segment, said first segment comprising regularly knitted, non-yarn bearing metal wire which forms said outer covering whereby said outer covering of non-yarn bearing metal wire protects said yarn on said inner part of said toroidal structure from becoming loose as said yarn degrades during use, said annular network structure being rolled upon itself beginning with the free end of the second segment such that upon completion of the rolling to form the toroidal structure, said first segment is rolled last to form said outer covering of said toroidal structure.

4,278,718

SEALING COMPOSITIONS FOR MINIMIZING SOLUBLE IRON MIGRATION

Charles A. Billings, Concord, and Robert H. Hofeldt, Littleton, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Jan. 11, 1980, Ser. No. 111,313

Int. Cl.³ B32B *3/02, 27/20, 27/22, 27/30*

U.S. Cl. 428—64 **15 Claims**

1. A plastisol sealing composition for inhibiting iron migration in acid packs consisting essentially of a polyvinyl chloride resin, between about 50 and 300 parts by weight of a plasticizer for the resin per 100 parts of said resin and the improvement therein comprising from about 0.1 to about 50 parts by weight of a metal oxide iron migration inhibitor per 100 parts of said resin, said inhibitor being selected from the group consisting of aluminum oxide, zinc oxide, magnesium oxide, calcium oxide, copper oxide, silver oxide, nickel oxide, chromium oxide, and mixtures thereot.

4,278,719

WATERPROOF BACKED TOWEL

Mildred A. Sarnecki, 1536 E. Mission La., Phoenix, Ariz. 85020

Filed Oct. 15, 1979, Ser. No. 84,643

Int. Cl.³ B32B *3/04*

U.S. Cl. 428—78 **1 Claim**

1. A waterproof backed towel comprising: (a) an absorbent cover sheet of preselected size consisting of terrycloth which has a huck side and a back side; and (b) a waterproof backing sheet consisting of waterproof nylon, which waterproof back-

ing sheet is coextensive with and slightly larger than the absorbent cover sheet, is in face-to-face juxtaposition with the back side of the absorbent cover sheet and is lapped over onto the

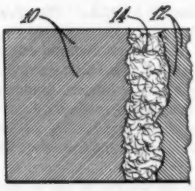
huck side of the absorbent cover sheet around the periphery of the cover sheet to form a waterproof edge around the periphery of the cover sheet.

4,278,720

BONDED MAT OF DIRECTIONALLY ORIENTED STRANDS AND RANDOMLY ORIENTED STRANDS

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, OhioIO

Filed May 2, 1979, Ser. No. 35,199
Int. Cl.³ B32B *5/12*
U.S. Cl. 428—109 **3 Claims**



1. A sheet molding compound comprising: a mat having two layers of long lengths of parallely oriented strand running at an angle to each other with a layer of randomly oriented glass strand positioned between said two parallely oriented strand layers and with strands of said layers touching each other at the points where said parallely oriented strands crossover randomly oriented strand, said layers being bonded by set organic binder that is limited generally to said crossover points, said mat being impregnated by a heat settable molding compound, and whereby a shifting between crossover points occurs during molding over projections to reduce wrinkling and prevent complete separation of the continuous strand layers.

4,278,721

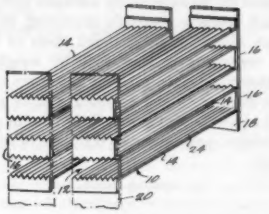
THERMAL BARRIER

Richard H. Hudgin, Marlboro, Mass., assignor to Princeton Polymer, Plainsboro, N.J.

Filed Aug. 23, 1979, Ser. No. 69,079
Int. Cl.³ B32B *3/28, 3/30*
U.S. Cl. 428—122 **33 Claims**

1. Apparatus for preventing heat to flow from a first area to a second area comprising:

a corrugated sheet including a plurality of side portions, each of said side portions having a first edge proximate said first area and a second edge proximate said second area, pairs of adjacent side portions defining a plurality of channels, each of said channels having a length substantially parallel to said side portions and extending between said first and second edges, and a thickness, said length being at least four times greater than said thickness;



said side portions having grooves for increasing the angle of incidence of infra-red radiation radiated from said sheet to enhance absorption and decrease reflection; and

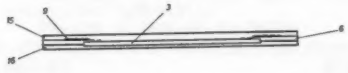
means for preventing convection between said channels.

4,278,722

MULTILAYER EDGE SEALED RECORD CARRIER

Joachim Hoppe; Yahya Haghiri-Tehrani, both of Munich, and Wolfgang Gauch, Otterfing, all of Fed. Rep. of Germany, assignors to G.A.O. Gesellschaft für Automation und Organisation mbH

Division of Ser. No. 861,343, Dec. 16, 1977, Pat. No. 4,208,231.
This application Jan. 10, 1979, Ser. No. 2,339
Claims priority, application Austria, Dec. 29, 1976, 9780/76
Int. Cl.³ B42D *15/02;* **G09F** *3/02*
U.S. Cl. 428—192 **2 Claims**



1. A record carrier comprising, a paper insert having a plastic film strip border disposed about said paper insert, a security device on said paper insert, a printed information and security pattern printed on a top surface of said paper insert and a top surface of said film border extending across a boundary between said paper insert top surface and said film border top surface without interruption, a top transparent film sealed to the top surfaces of said paper insert and said film border and a bottom transparent film sealed to a bottom surface of said paper insert and said film border, whereby a removal of said top transparent film over said printed pattern will distort said printed pattern.

4,278,723

SHAPED BODY OF EXTRUDED ACRYLIC GLASS

Theodor P. Moench, Gross-Umstadt-Heubach, and Friedrich Hanstein, Gross-Zimmern, both of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Dec. 4, 1979, Ser. No. 100,110
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1978, 2853302
Int. Cl.³ B32B *23/02;* **B28B** *11/08;* **B29C** *17/04*
U.S. Cl. 428—192 **8 Claims**

1. A shaped body produced by the reshaping of an originally-flat extruded sheet of acrylic glass having a molecular weight between 50,000 and 300,000, said shaped body having a three-dimensionally reshaped region surrounded by a flat border in the plane of the originally-flat sheet, said flat border being stretched biaxially by at least 25 percent in each direction, said shaped body further having transition zones, between said three-dimensionally reshaped region and said surrounding flat border, which are less sensitive to mechanical and corro-

sion damage than are corresponding transition zones in a reshaped extruded sheet of acrylic glass not having a flat border stretched biaxially by at least 25 percent in each direction.

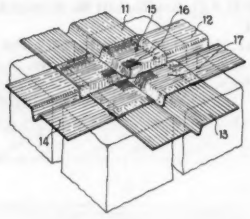
8. A process for manufacturing a shaped body as defined in claim 1 which comprises biaxially stretching, by at least about 25% in each direction, an extruded sheet of a polymer or copolymer containing at least 80% by weight of units of methyl methacrylate, then gripping the edges of the plate to maintain its dimensions and applying a force to the interior portion of the sheet while the sheet is in a thermoelastic state to move said interior portion out of the plane of the surrounding edges thereof.

4,278,724

COMPOSITE BITUMINOUS SHEET, PARTICULARLY FOR SEALING MEMBERS

Henri F. M. Desgouilles, Chantilly, France, assignor to Composants Industrialises du Batiment, par abreviation C.I.B., Paris, France

Filed Dec. 6, 1979, Ser. No. 100,963
Claims priority, application France, Dec. 7, 1978, 78 34495
Int. Cl.³ B32B *11/08, 11/10*
U.S. Cl. 428—193 **11 Claims**



1. Composite bituminous sheet, particularly useful for sealing members, comprising an external zone of a non-extensible cloth surrounding at least one central zone formed of an extensible elastic cloth, the whole being coated with a bituminous composition which is the same for all said zones.

4,278,725

CERMET RESISTOR AND METHOD OF MAKING SAME

Richard E. Riley, Riverside, and Bradley D. Turner, Pomona, both of Calif., assignors to Spectrol Electronics Corp., City of Industry, Calif.

Filed Jan. 21, 1980, Ser. No. 114,010
Int. Cl.³ H01B *1/02*
U.S. Cl. 428—208 **4 Claims**

1. A resistance element comprising an electrically nonconductive base having a layer of resistance material thereon, said resistance material comprised of a glass having a noble metal in finely divided form dispersed throughout the glass and minute particles of a gold-silver alloy on the surface of the glass.

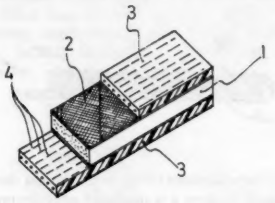
4,278,726

ENERGY ABSORBING ELEMENTS COMPRISING RIGID NON-ELASTOMERIC LAYER AND VISCO-ELASTIC LAYER WITH TWISTED FIBER BUNDLES EMBEDDED THEREIN

Andre Wieme, Zwevegem, Belgium, assignor to N. V. Bekaert S.A., Zwevegem, Belgium

Filed Sep. 24, 1979, Ser. No. 78,057
Claims priority, application Luxembourg, Sep. 28, 1978, 80296
Int. Cl.³ F16C *27/06;* **F16F** *1/40, 7/12, 11/00*
U.S. Cl. 428—229 **6 Claims**

1. An energy absorbing element such as a spring, shock absorber or vibration damper in the form of a laminated structure comprising at least one rigid non-elastomeric layer bonded



to a visco-elastic layer, wherein twisted fibre bundles are embedded in said visco-elastic layer.

4,278,727

ALKAI-SOLUBLE, WATER-RESISTANT BINDERS FOR NON-WOVEN MATERIALS

Hartmut Brabetz; Heinz Schäfer, and Dieter Gorzel, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 946,552, Sep. 28, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,667
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1977, 2747182
Int. Cl.³ B32B *27/00, 27/10*
U.S. Cl. 428—290 **8 Claims**

1. A cellulosic non-woven material containing from 2% to 25% by dry weight of the alkali-soluble, water-resistant in neutral to weakly acidic solutions, binder for cellulosic non-woven material consisting essentially of an aqueous vinyl acetate copolymer dispersion having a solids content of from 10% to 60% by weight and the following range of monomeric units:

(1) 50% to 70% by weight of the monomer units of vinyl acetate units,

(2) 20% to 35% by weight of the monomer units of higher molecular weight ethylenically-unsaturated ester units selected from the group consisting of vinyl esters of alkanoic acids having from 8 to 18 carbon atoms, alkyl esters having from 4 to 18 carbon atoms in the alkyl of acrylic acid, alkyl esters having from 4 to 18 carbon atoms in the alkyl of methacrylic acid, and mixtures thereof, and

(3) 3% to 15% by weight of the monomer units of ethylenically-unsaturated acid units selected from the group consisting of alkenoic acids having 3 to 4 carbon atoms, alkendioic acids having 4 carbon atoms, alkyl monoesters having from 1 to 18 carbon atoms in the alkyl of alkenedioic acids having 4 carbon atoms, alkenyl monoesters having from 3 to 6 carbon atoms in the alkenyl of alkanedioic acids having 2 to 6 carbon atoms, and mixtures thereof,

and containing from 0.5% to 10% by weight, based on the monomer units, of protective colloids and from 0 to 6% by weight, based on the monomer units of emulsifiers, said binder being applied to said cellulosic non-woven material as an aqueous dispersion and subsequently dried.

4,278,728

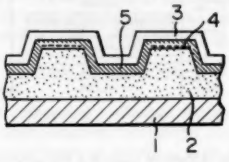
EMBOSSED INTERIOR FINISHING MATERIALS HAVING EXCELLENT CIGARETTE MARK RESISTANCE

Kiyoshi Honda, Hirakata; Kazuya Kuriyama, Chiba; Shigeru Murakami, Ichihara; Ryozo Sugawara, and Chiaki Nakamura, both of Chiba, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan

Filed Oct. 26, 1979, Ser. No. 88,416
Claims priority, application Japan, Oct. 30, 1978, 53-132613
Int. Cl.³ B32B *3/00, 5/18, 5/20;* **B05D** *3/06*
U.S. Cl. 428—313 **13 Claims**

1. A method for producing an embossed interior finishing

material having superior cigarette mark resistance, which comprises coating a composition comprising a vinyl chloride polymer, a reactive plasticizer, a blowing agent and a light sensitizer on a base material (A), irradiating ultraviolet light partly onto the coated base material, heating the coated base



material to form a foamed undercoat layer (B), coating a composition comprising a vinyl chloride polymer, a reactive plasticizer and a light sensitizing agent on said undercoat layer (B), and then irradiating ultraviolet light onto the resulting laminate to form a top coat layer (C).

4,278,729

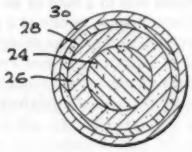
PRODUCTION OF CARBON FIBER-TANTALUM CARBIDE COMPOSITES

James O. Gibson, and Mark G. Gibson, both of 871 El Oro La., Pacific Palisades, Calif. 90272

Division of Ser. No. 942,485, Sep. 15, 1978, Pat. No. 4,196,230. This application Nov. 19, 1979, Ser. No. 95,158

Int. Cl.³ B32B *9/00;* **D02G** *3/00*

U.S. Cl. 428—368 **13 Claims**



1. An erosion resistant high strength composite consisting essentially of carbon fibers impregnated or coated with a first coating of tantalum carbide and carbon, a second coating of tantalum carbide overlying said first coating and a third continuous phase coating of a refractory metal overlying said second coating and forming the matrix of said composite, said refractory metal selected from the group consisting of tantalum, rhenium and tungsten.

12. An erosion resistant high strength composite comprising a matrix of a refractory metal selected from the group consisting of tantalum, rhenium and tungsten, and a multiplicity of carbon fibers in said matrix, said carbon fibers impregnated or coated with a first coating of tantalum carbide and carbon, and a second coating of tantalum carbide overlying said first coating, said matrix metal forming a continuous phase coating over said second coating.

4,278,730

FAST-COOLING STYRENE POLYMER FOAMS

John P. Spicuzza, Jr., Mt. Lebanon, Pa., assignor to ARCO Polymers, Inc., Philadelphia, Pa.

Filed Oct. 1, 1980, Ser. No. 192,664

Int. Cl.³ C08J *9/14*

U.S. Cl. 428—407 **5 Claims**

1. A composition comprising a styrene polymer particles containing dispersed throughout 3 to 20 weight percent of a blowing agent and coated on the surface of said particles thereof by 0.06 to 0.6 weight percent of decaglyceroloctaoleate.

4,278,731

FAST-COOLING STYRENE POLYMER FOAMS

John P. Spicuzza, Jr., Mt. Lebanon, and John G. Klepic, III, Coraopolis, both of Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Filed Oct. 1, 1980, Ser. No. 192,665

Int. Cl.³ C08J *9/14*

U.S. Cl. 428—407 **5 Claims**

1. A composition comprising a styrene polymer particles containing dispersed throughout 3 to 20 weight percent of a blowing agent and coated on the surface of said particles with 0.05 to 0.6 weight percent of a mixture of esters having general formula RCO_2R', wherein R and R' may be the same or different and are long chain alkyl groups having from 12 to 18 carbon atoms and which mixture of esters is composed of 20 to 30 weight percent of C_{14} or lower alkyls, 50 to 55 weight percent of C_{16} alkyls and 20 to 25 weight percent of C_{18} alkyls.

4,278,732

ANTILUMPING EXPANDABLE STYRENE POLYMERS

John P. Spicuzza, Jr., Mt. Lebanon, Pa., assignor to ARCO Polymers, Inc., Philadelphia, Pa.

Filed Oct. 1, 1980, Ser. No. 192,670

Int. Cl.³ C08J *9/14*

U.S. Cl. 428—407 **3 Claims**

1. Expandable styrene polymer particles which will not lump during pre-expansion, comprising styrene polymer particles containing a blowing agent and having on their surface from 0.02 to 0.05 percent by weight based on polymer of decaglyceroloctaoleate.

4,278,733

EPOXY MODIFIED ANILINE-PHENOLIC LAMINATE

James R. Benzinger, Orchard Park, N.Y., assignor to Spaulding Fibre Company, Inc., Buffalo, N.Y.

Filed Jul. 23, 1979, Ser. No. 59,581

Int. Cl.³ B32B *27/08, 27/10, 27/26, 27/38, 27/42*

U.S. Cl. 428—413 **10 Claims**

1. A laminate product comprising a base material impregnated with a cured mixture of a first composition comprising two moles of aniline, about 5 to 28 moles of phenol and about 7 to 30 moles of formaldehyde and a second composition consisting essentially of an epoxy resin which is about 10% to 500% by weight of the first composition.

6. A method of making a laminate product comprising:

(a) Reacting a mixture comprising two moles of aniline, about 5 to 28 moles of phenol and about 7 to 30 moles of formaldehyde under reflux to produce a resole;

(b) Separating said resole and adjusting the water content thereof to less than about 12% by weight;

(c) Adding a solvent to said resole in an amount sufficient to bring the total solids content to about 50% by weight;

(d) Adding essentially only epoxy resin to said mixture; and

(e) Impregnating a base material with the composition from step (d).

4,278,734

OPTICAL INFORMATION RECORDING MATERIAL AND METHOD OF RECORDING AND REPRODUCING INFORMATION USING SAME MATERIAL

Takeo Ohta; Nobuo Akahira; Tatsushi Nakamura, and Tadaoki Yamashita, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 8, 1979, Ser. No. 64,748

Claims priority, application Japan, Aug. 17, 1978, 53-100626

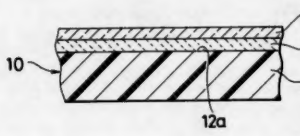
Int. Cl.³ C23C *3/04*

U.S. Cl. 428—432 **13 Claims**

6. In a method of optically recording and reproducing information, wherein information is recorded on a thin film of a photosensitive material by applying optical energy to the thin film to cause a selective change in optical density of the thin film and subsequently reproduced by applying optical energy

to the thin film to detect variations of optical density of the thin film resulting from the recording of information,

the improvement comprising said photosensitive material



being at least one suboxide of a metal or semimetal selected from the elements of Groups IIIB, IVB, VB and VIB and added with at least one Group VIB element selected from the group consisting of S aand Se.

4,278,735

AQUEOUS METAL COORDINATION COMPOUNDS AS PROTECTIVE COATINGS FOR GLASS

Arnold F. Marcantonio, and Rodney E. Dailey, both of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

Division of Ser. No. 8,291, Jan. 31, 1979, Pat. No. 4,232,065. This application Feb. 21, 1980, Ser. No. 123,235

Int. Cl.³ B32B *17/06, 27/06*

U.S. Cl. 428—432 **4 Claims**

1. A coated glass article having improved chemical durability and scratch resistance, said coated article being formed by applying to the surface of said article while it is at a temperature of at least 425° C., an aqueous solution comprising of from 5 to about 30 weight percent of compound having MX_6^{-2} ions wherein M is titanium, tin or zirconium and X is a halogen, said M being the central atom in the compound and having an oxidation number of +4 and a coordination number of 6, the temperature of the glass being sufficient to immediately and substantially completely vaporize the water content of said solution, annealing said coated article, applying thereafter to said article an organic material selected from the group consisting of polyethylene, polypropylene, polystyrene, polyurethane, and fatty acids and their derivatives and mixtures thereof.

2. A coated glass article having improved chemical durability, said coated article being formed by applying to the surface a coordination compound at a temperature of at least 425° C., and above the decomposition temperature of said coordination compound, said compound being represented by the formula Y_2MX_6 wherein Y is an alkali metal, hydrogen or ammonium, M is titanium, tin or zirconium and X is a halogen, said M being the central atom in the compound and having an oxidation number of +4 and a coordination number of 6, said article having a titrant value less than about 0.75 ml of 0.02 N H_2SO_4, the coating formed by said compound being greater than about 8 angstroms and having a ware scratch resistance of more than 30 pounds load abrasion to audible scratching.

4,278,736

CONTRAST ENHANCEMENT FILTER AND METHOD

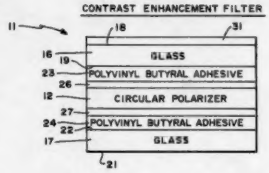
Marc A. Kamerling, Santa Rosa, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Jan. 5, 1979, Ser. No. 1,359

Int. Cl.³ G02B *1/08;* **B32B** *17/10, 27/42, 27/30*

U.S. Cl. 428—437 **3 Claims**

1. In a contrast enhancement filter for use with a face plate of a display device, first and second transparent glass substrates with first and second surfaces with the first surfaces being disposed in the medium in which the filter is disposed, a sheet-like polarizer disposed between the first and second substrates, said polarizer being formed of stretched plastic members covered by layers of cellulose acetate butyrate, said stretched plastic members comprising a linear polarizer and a quarter wave retardation plate, a dried plastisol primer layer disposed on the outer surface of the layers of cellulose acetate butyrate facing the glass substrates, and first and second layers of a



polyvinyl butyral adhesive securing the circular polarizer to the glass substrates.

4,278,737

ANODIZING ALUMINUM

Geoffrey K. Creffield, Chessington; Anthony J. Wickens, Rudgwick; Anthony C. H. Dowd, Chessington, and Vernon F. F. Henley, London, all of England, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Jul. 30, 1979, Ser. No. 62,146

Claims priority, application United Kingdom, Aug. 4, 1978, 32277/78

Int. Cl.³ C25D *11/06*

U.S. Cl. 428—469 **12 Claims**

1. A method of anodising aluminum which comprises subjecting it to electrolysis first in a bath of an aqueous alkaline electrolyte solution containing a borate at a pH of between 9 and 11 and a temperature in the range of about 50° to 80° C. until there is formed an oxide layer at least 2 microns thick and then in a second bath of electrolyte containing an aqueous solution of an acid until the desired total thickness of the oxide coating is formed.

4,278,738

ETHYLENE-VINYL ACETATE COPOLYMER FILM LAMINATE

Harri J. Brax; Joseph F. Porinchak, both of Spartanburg, and Alan S. Weinberg, Greenville, all of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 887,893, Mar. 10, 1978, abandoned, which is a continuation of Ser. No. 646,110, Jan. 2, 1976, Pat. No. 4,031,162, which is a division of Ser. No. 344,005, Mar. 22, 1973, Pat. No. 3,953,557, which is a division of Ser. No. 129,501, Mar. 30, 1971, Pat. No. 3,741,253. This application Jul. 16, 1979, Ser. No. 57,615

Int. Cl.³ B32B *27/08, 27/32;* **B29D** *23/04*

U.S. Cl. 428—515 **4 Claims**

1. A multi-ply, thermoplastic film laminate comprising:

(a) a first ply being a substrate layer consisting essentially of a cross-linked ethylene-vinyl acetate copolymer;

(b) a second ply comprising a barrier material selected from the group consisting of vinyl chloride-vinylidene chloride copolymers, and,

(c) a third ply comprising an uncross-linked ethylene-vinyl acetate copolymer.

4,278,739

ELECTROLESS METAL PLATED LAMINATES

Miguel Coll-Palagos, Rye, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 6,141, Jan. 24, 1979, which is a continuation-in-part of Ser. No. 871,308, Jan. 23, 1978, abandoned, which is a continuation of Ser. No. 735,243, Oct. 26, 1976, abandoned, which is a division of Ser. No. 561,957, Mar. 25, 1975, abandoned. This application Jul. 16, 1979, Ser. No. 57,877

Int. Cl.³ C23C *3/02*

U.S. Cl. 428—623 6 Claims

1. A laminate comprising a substrate material provided with a coating of a non-conductive hydrophilic composite material and said composite material provided with a coating of an electrolessly plated metal wherein the hydrophilic composite material is comprised of a blend of at least one film forming component selected from the group consisting of vinyl chloride, vinyl acetate and copolymers thereof; and cellulose esters and polyvinyl acetals; and at least one hydrophilic component of a water soluble polymeric component, the water soluble component being polyvinyl pyrrolidone, the water soluble component being dispersed throughout the coating of the composite material producing a microporous surface upon contacting the composite material with water or a water solution of salts which dissolve the water soluble component.

4,278,740

ALUMINUM-TIN BASE BEARING ALLOY AND COMPOSITE

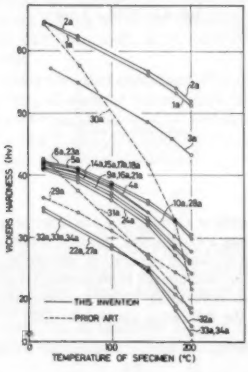
Tamotsu Nara, Toyota, and Soji Kamiya, Nishio, both of Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan

Filed Jun. 11, 1979, Ser. No. 47,336

Claims priority, application Japan, Jul. 11, 1978, 53/84232; Jul. 11, 1978, 53/84233

Int. Cl.³ B32B *15/04*

U.S. Cl. 428—653 20 Claims



1. An Al-Sn base, bearing alloy, consisting essentially of: from 3.5 to 35 wt.% of Sn; from 0.1 to 1.0 wt.% of Cr; from 1 to 10 wt.%, in total, of one or more additive elements selected from the group consisting of Si, Mn, Sb, Ti, Ni and Fe; and the balance is Al.

5. A bearing material which is made by applying said bearing alloy as claimed in claim 1 to a backing steel sheet by pressure welding.

4,278,741

NONAQUEOUS CELL

Tibor Kalnoki-kis, Westlake, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 147,132, May 6, 1980, abandoned, which is a continuation-in-part of Ser. No. 52,463, Jun. 27, 1979, abandoned. This application May 30, 1980, Ser. No. 151,993

Int. Cl.³ H01M *6/00*

U.S. Cl. 429—48 14 Claims

1. A nonaqueous cell comprising an ionically conductive cathode-electrolyte solution comprising a solute dissolved in an active liquid cathode; an active metal anode; a cathode collector; a separator disposed between the anode and the cathode collector; and wherein at least a portion of the surface of the separator is coated with a vinyl polymer film.

4,278,742

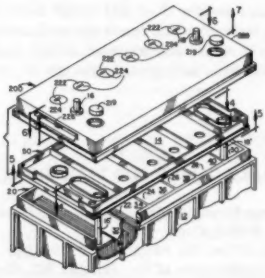
MANIFOLD VENTED BATTERY COVER

Terry R. Oxenreider, Wernersville, and Herbert A. Bush, Jr., Kenhorst, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Filed May 5, 1980, Ser. No. 146,577

Int. Cl.³ H01M *2/12*

U.S. Cl. 429—88 2 Claims



1. A manifold cover for use with a battery case having upstanding partitions forming a plurality of cell compartments and an equal plurality of battery plate packets to provide a lead acid storage battery, said manifold cover comprising:

an inner member for sealably engaging said battery case and said upstanding partitions to define a plurality of substantially closed cells, each of said cells having a vent port which depends from said lower portion of said manifold cover into said cell,

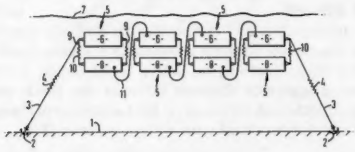
an outer member dimensioned to fit over and about said inner member to define a manifold portion therebetween, said outer member having: an electrolyte fill port for each of the respective cells, said electrolyte fill port extending from the upper surface of said outer member through said manifold portion and said lower member into said battery cell, said electrolyte fill port further having a cap for sealing said fill port; a bore positioned over each of the end cells of said battery case; and an aperture for opening said manifold to the atmosphere; and

terminal posts, positioned over each of the end cells of said battery case, said terminals comprising a male portion extending through said outer member, a web portion extending under said outer member and a female portion depending from said web portion, said female portion being positioned under said bore in said outer member and dimensioned to receive a terminal post normally associated with the end cell battery plate packet, said web portion and said female portion encapsulated and sealed within the said manifold portion between said inner and outer members.

4,278,743
GENERATION OF ELECTRICAL ENERGY

Jack E. Thompson, "Edgmont", Woodhouse La., Holmbury St. Mary, Nr. Dorking, Surrey, England

Filed Dec. 31, 1979, Ser. No. 108,555
Int. Cl.³ H01M 6/34
U.S. Cl. 429—119 8 Claims

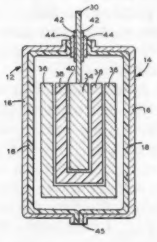


1. A marine installation for generating electrical energy, which installation operates as an electric battery using the sea as the electrolyte and comprising a plurality of individual electric cells connected together mechanically and electrically to form a floating structure which is anchored to the sea bed and insulated to prevent loss of potential by conduction, each cell comprising an upper electrode coated with a material which reacts electrochemically with sea water and arranged to float on or just below the surface of the water, a lower electrode of greater weight than said upper electrode and also coated with a material which reacts electrochemically with sea water, insulated means and insulated means suspending said lower electrode from said upper electrode.

4,278,744
EXPANDABLE CASING FOR ELECTRO-CHEMICAL CELLS

Lee F. Athearn, Reading, Mass., assignor to Duracell International Inc., Bethel, Conn.

Continuation of Ser. No. 643,588, Dec. 19, 1975, abandoned, which is a continuation of Ser. No. 187,762, Oct. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 822,661, May 7, 1969, abandoned. This application Jan. 27, 1978, Ser. No. 873,046
Int. Cl.³ H01M 2/02
U.S. Cl. 429—181 3 Claims

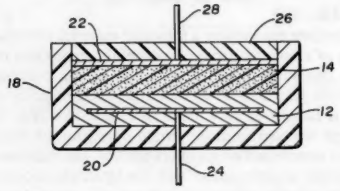


1. An electrochemical cell containing a lithium anode, an electrolyte salt, an organic electrolyte solvent, and a cathode, and said cell having an hermetically sealed, flexible casing with terminals extending through sealed openings in the casing; wherein said casing is formed from a laminated material comprising a first inner layer which is permeable to vapors of said electrolyte solvent but free of pinholes, thereby rendering it impermeable to said electrolyte salt, and said inner layer being substantially completely surrounded by an outer, air impermeable metal barrier layer which prevents the vapors of said electrolyte solvent from escaping.

4,278,745
CATHODE MATERIALS FOR ELECTROCHEMICAL CELLS

Paul M. Skarstad, Wayzata; Darrel F. Untereker, Cedar, and Arthur J. Coury, St. Paul, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 25, 1980, Ser. No. 124,082
Int. Cl.³ H01M 4/60
U.S. Cl. 429—213 23 Claims

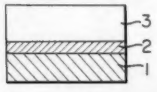


1. As a cathode material for electrochemical cells, a combination consisting essentially of a conductive mixture comprising a first constituent selected from the group consisting of monomeric substituted pyridines, dimeric substituted pyridines, derivatives of dimeric substituted pyridines, monomeric quinoline, monomeric substituted quinolines, trimeric substituted pyridines, derivatives of trimeric substituted pyridines and mixtures thereof; a second constituent selected from the group consisting of poly-2-vinylpyridine; poly-4-vinylpyridine; poly-2-vinylquinoline; poly-2-methyl-5-vinylpyridine; copolymers thereof; pyridine; 1,2-bis(4-pyridyl)ethylene; 1,2-bis(2-pyridyl)ethylene; 2,2′-dipyridyl; 4,4′-dipyridyl; 2,4′-dipyridyl, and mixtures thereof, and a third constituent comprising iodine.

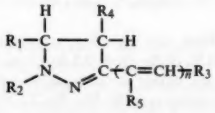
4,278,746
PHOTOSENSITIVE ELEMENTS FOR ELECTROPHOTOGRAPHY

Satoshi Goto; Yoshiaki Takei; Ichiro Imaho, and Hiroyuki Nomori, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,456
Claims priority, application Japan, Jun. 21, 1978, 53-75854
Int. Cl.³ G03G 5/04
U.S. Cl. 430—59 8 Claims



1. A photosensitive element for electrophotography which element comprises a conductive support, a charge generating layer containing a charge generating substance, and a charge transporting layer; said charge transporting layer comprising a polymeric binder containing a charge transporting substance represented by the following general formula



wherein n represents 0 or 1, R_1, R_2 and R_3 each represent an aryl group, and R_4 and R_5 each represent a hydrogen, an alkyl group having 1–4 carbon atoms, an aryl group or an aralkyl

group, provided that R_4 and R_5 are not simultaneously a hydrogen, and when n is 0, R_4 is not hydrogen.

4,278,747

ELECTROPHOTOGRAPHIC PLATE COMPRISING A CONDUCTIVE SUBSTRATE AND A PHOTOSENSITIVE LAYER CONTAINING AN ORGANIC PHOTOCONDUCTOR LAYER COMPOSED OF A HYDRAZONE COMPOUND

Tetsuo Murayama, Machida; Shigenori Otsuka, Tokyo, and Tsunemitsu Tajima, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

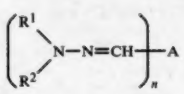
Filed Apr. 26, 1979, Ser. No. 33,401

Claims priority, application Japan, May 17, 1978, 53/58536

Int. Cl.³ G03G *5/06*

U.S. Cl. 430—82 **15 Claims**

1. An electrophotographic plate comprising a conductive substrate and a photosensitive layer coated thereon; wherein said photosensitive layer comprises an organic photoconductor layer; and wherein said organic photoconductor layer comprises a hydrazone compound represented by the general formula (I):



(I)

wherein R^1 and R^2 are independently selected from the group consisting of substituted or unsubstituted alkyl, substituted or unsubstituted aralkyl, and substituted or unsubstituted aryl, n is a number of 1 or 2, and A is an unsubstituted or substituted aromatic heterocyclic group, and a binder.

4,278,748

ABSORBED HYDRAZIDE NUCLEATING AGENTS AND PHOTOGRAPHIC ELEMENTS CONTAINING SUCH AGENTS

Jasbir Sidhu, Harrow; Michael J. Simons, Ruislip, and Miroslav V. Mijovic, Watford, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,549

Int. Cl.³ G03C *1/40, 5/24, 7/00, 1/06*

U.S. Cl. 430—212 **17 Claims**

1. A silver halide emulsion comprised of silver halide grains capable of forming an internal latent image and, adsorbed to the surface of said silver halide grains, a nucleating amount of a triazole-substituted phenylhydrazide, wherein the phenyl moiety is triazole-substituted.

4,278,749

RECEIVING ELEMENTS CONTAINING GRAFT GELATIN POLYMERS AS DYE MORDANTS

Peter J. Wright, Ilford, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 4, 1980, Ser. No. 118,243

Claims priority, application United Kingdom, Sep. 3, 1979, 8311/79

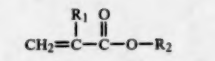
Int. Cl.³ G03C *1/40, 7/00;* **B41N** *5/00, 3/00*

U.S. Cl. 430—213 **13 Claims**

1. A receiving element for transferred dyes which comprises a support having coated thereon a mordant layer which comprises a graft polymer which is prepared from at least three components:

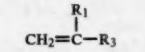
(a) a water-soluble proteinacious polymer

(b) an acrylic monomer of the general formula



(1)

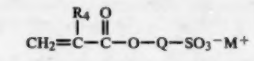
or a vinyl monomer of the general formula



(2)

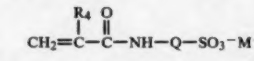
wherein R_1 is hydrogen, halogen or methyl and R_2 is alkyl or aryl and R_3 is aryl, acyloxy or cyano, and

(c) an acrylate or methacrylate monomer of the general formula



(3)

where R_4 is hydrogen or methyl, Q is a bivalent organic radical and M^+ is an alkali metal or ammonium cation or an acrylamide or methacrylamide monomer of the formula



(4)

where R_4 is hydrogen or methyl, Q is a bivalent organic radical and M^+ is an alkali metal or ammonium cation.

4,278,750

NOVEL ELECTRON DONOR PRECURSORS AND PHOTOGRAPHIC ELEMENTS CONTAINING THEM

Chung Y. Chen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 6, 1979, Ser. No. 72,873

Int. Cl.³ G03C *1/40, 7/00, 5/54, 1/10*

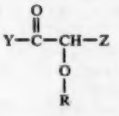
U.S. Cl. 430—218 **35 Claims**

11. In an image transfer film unit processable by means of an alkaline processing composition containing an electron transfer agent, the film unit comprising:

(a) a photographic element comprising a support and a silver halide emulsion having associated therewith an immobile compound which upon reduction under alkaline conditions will release a diffusible dye or photographic reagent;

(b) an image-receiving layer; and

(c) an electron donor precursor codispersed together with the immobile compound in the same solvent; the improvement wherein the electron donor precursor comprises a compound represented by the structural formula:

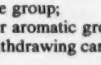


wherein:

R is an alkali labile group;

Y is an aliphatic or aromatic group;

Z is an electron withdrawing carbamoyl group having the formula



where one of R^{10} and R^{11} is hydrogen and the other is aryl of 6 to 30 carbon atoms; and

Y and Z are of sufficient bulk to render the electron donor precursor substantially immobile in alkali-permeable layers of the film unit.

4,278,751

PHOTOPOLYMERIZATION CO-INITIATOR COMPOSITIONS COMPRISING AMINE-SUBSTITUTED KETOCOUMARINS AND CERTAIN ACETIC ACID DERIVATIVE ACTIVATORS

Donald P. Specht; Kenneth L. Payne, and Samir Y. Farid, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

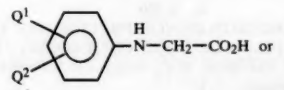
Filed Nov. 16, 1979, Ser. No. 95,171
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—281 **9 Claims**

1. In a photopolymerizable composition comprising an addition-polymerizable compound and a co-initiator composition comprising a carbonyl sensitizer and a photopolymerization activator;

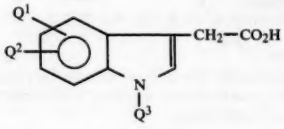
the improvement wherein said sensitizer is an amine-substituted ketocoumarin having an adsorption maximum between about 350 and 550 nm and a

substituent in the 3-position wherein R^1 is alkyl or alkenyl having 1 to 12 carbon atoms, or a carbocyclic or heterocyclic group having 5 to 20 carbon and hetero ring atoms; and

wherein said activator has the structure



(I)



(II)

wherein Q^1 and Q^2 are each independently hydrogen; alkyl, alkoxy, or thioalkyl containing from 1 to 5 carbon atoms; aryl, aryloxy, or benzoyloxy containing from 6 to 10 carbon atoms; hydroxy; or halogen; or together Q^1 and Q^2 are the necessary atoms to complete a fused heterocyclic or aromatic ring containing from 4 to 6 ring atoms; and Q^3 is hydrogen or alkyl containing from 1 to 5 carbon atoms.

4,278,752

FLAME RETARDANT RADIATION SENSITIVE ELEMENT

Joseph E. Gervay, Red Bank, and Yvan P. Pilette, Lawrenceville, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 940,170, Sep. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 780,907, Mar. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 735,979, Oct. 27, 1976, abandoned. This application Feb. 14, 1980, Ser. No. 121,438
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—281 **15 Claims**

1. In a solvent-developable radiation-sensitive solder mask element having a support bearing a layer of photopolymerizable composition useful as a permanent coating for a printed circuit, which comprises (a) at least one addition polymerizable ethylenically unsaturated compound having a boiling point above 100° C. at normal pressure, (b) an organic free radical-generating addition polymerization initiator activatable by actinic radiation in the ultraviolet-to-visible region of the spectrum and (c) at least 20% by weight of a macromolecular organic polymeric binder, based on the total weight of the composition, the improvement for the purpose of rendering the composition flame retardant and resistant to molten solder without blistering or degradiation of the photopolymerizable layer upon polymerization which comprises

(1) utilizing as the binder component a macromolecular organic polymer containing at least 5% by weight acrylonitrile monomeric units and

(2) incorporating halogen by covalent bonding to at least component (a) of the photopolymerizable composition, the weight percent of covalently bonded halogen based on the total weight of the composition being at least 5 weight percent, with the proviso that the covalent halogen bond is to an aromatic moiety or a conjugated vinyl component.

4,278,753

PLASMA DEVELOPABLE PHOTORESIST COMPOSITION WITH POLYVINYL FORMAL BINDER

James M. Lewis, Aurora, and Eugene F. McInerney, Chagrin Falls, both of Ohio, assignors to Horizons Research Incorporated, Cleveland, Ohio

Filed Feb. 25, 1980, Ser. No. 124,413
Int. Cl.³ G03C *1/68, 5/00*
U.S. Cl. 430—283 **20 Claims**

1. In a photosensitive composition which can be developed as a photoresist by an oxygen plasma, which photosensitive composition consists essentially of a binder containing:

(1) at least one polymerizable N-vinyl monomer selected from the group consisting of N-vinylamines, N-vinylamides, N-vinylimides; and

(2) at least one organo-halogen compound which sufficiently enhances the effect of exposing said monomer to a suitable dose of electromagnetic radiation, so as to induce polymerization of said monomer;

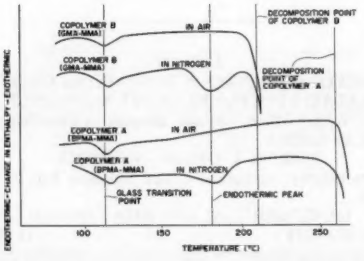
the improvement which consists in providing a polyvinylformal binder having a molecular weight range (weight average) between 10,000 to 40,000 as said binder.

4,278,754

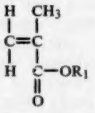
RESISTS AND METHOD OF MANUFACTURING SEMICONDUCTOR ELEMENTS BY USING THE SAME

Yoshio Yamashita; Mitsumasa Kunishi, and Ryuji Kawazu, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

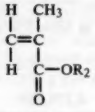
Filed Jul. 17, 1979, Ser. No. 58,814
Claims priority, application Japan, Jul. 20, 1978, 53-87753
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—323 **4 Claims**



1. A method of forming a fine pattern on a substrate comprising the steps of preparing a resist consisting essentially of a copolymer of 10–90 mole % of a first monomer of the formula



where R_1 represents an alkyl group of 1–3 carbon atoms containing at least one member selected from the group consisting of bromine, chlorine and an epoxide radical, and 90–10 mole % of a second monomer of the formula



where R_2 represents an alkyl radical; applying said copolymer resist onto a substrate to form a copolymer resist layer; irradiating said copolymer resist layer with ionizing radiations; dissolving irradiated portions of said copolymer resist layer to form a positive pattern; heating the resulting assembly in an inert atmosphere at a temperature of about 180° C. for about 20 to 30 minutes to cause a crosslinking reaction of reactive radicals remaining in said copolymer resist; and etching the heated assembly with a liquid etchant to form an etched pattern on said substrate.

4,278,755

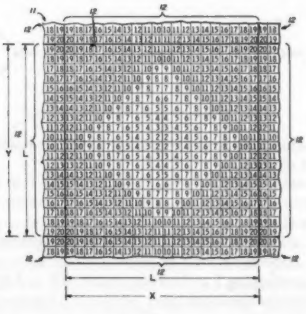
HALFTONE SCREEN AND METHOD OF USING SAME

Hua-Kuang Liu, Tuscaloosa, Ala., assignor to Lumin, Inc., Tuscaloosa, Ala.

Division of Ser. No. 894,902, Apr. 10, 1978, Pat. No. 4,188,225. This application Aug. 27, 1979, Ser. No. 69,907

Int. Cl.³ G03F *5/00*

U.S. Cl. 430—396 **9 Claims**



1. In a method of using a screen for reproduction of continuous-tone graphics, the steps of:

exposing a high contrast medium to the continuous tone graphic image to be reproduced through a screen pattern to produce a corresponding dot exposure pattern on the high contrast medium, said exposure dots having a size corresponding to the tone of the graphic image in the region of the respective dot, said screen pattern being characterized by comprising a two-dimensional matrix of cell portions each cell portion having a common pattern of transmittance to radiation to be directed through said screen pattern, said common pattern of transmittance having a plural finite number of different discrete transmittance level patterns, each cell being characterized by sets of unit areas, each set of unit areas having a uniform optical transmittance level, with each set of unit areas having a discrete optical transmittance level differing from each other set of unit areas within the cell by a well-defined combination of unit step functions being functions of two variables, one variable being the distance to the point where the optical transmittance level is evaluated from the boundary of a first side of said cell, and the other variable being the distance of said point from the boundary of the side adjacent said first side of said cell.

4,278,756

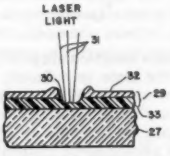
REFLECTIVE DATA STORAGE MEDIUM MADE BY SILVER DIFFUSION TRANSFER

Eric W. Bouldin, Woodside, and Jerome Drexler, Los Altos Hills, both of Calif., assignors to Drexler Technology Corporation, Mountain View, Calif.

Filed Jul. 6, 1979, Ser. No. 55,270

Int. Cl.³ G03C *1/02, 5/32;* **G01D** *15/24, 15/26*

U.S. Cl. 430—414 **18 Claims**



18. A negative silver diffusion transfer process for making a reflective electrically non-conducting data storage medium from a photosensitive silver-halide emulsion comprising,

photographically defining data storage fields in a photosensitive silver-halide emulsion and further defining a pattern of indicia in these recording fields,

photographically exposing and chemically developing said pattern to form low reflectivity data images while leaving the remainder of the silver-halide emulsion unexposed and undeveloped,

forming an areawise surface latent image layer of silver precipitating nuclei in the unexposed and undeveloped recording fields of the photosensitive silver-halide emulsion layer, said latent image layer of silver precipitating nuclei having a gradient of decreasing volume concentration through the depth of the emulsion, said emulsion having unexposed photosensitive silver halide remaining therein in concentrations inversely related to said latent image concentration,

contacting said unexposed photosensitive silver-halide emulsion layer with a reagent, comprising a weak silver-halide developing agent for chemical development of said surface latent image layer of silver precipitating nuclei and a rapid-acting silver-halide complexing solvent for reacting with unexposed and undeveloped silver halide to form soluble silver ion complexes which are transported by diffusion transfer to said chemically developed silver-precipitating nuclei of said latent image where silver of said silver ion complexes is precipitated and adsorbed on said chemically developed nuclei in the presence of said developer acting as a reducing agent, thereby forming a reflective electrically non-conducting layer of aggregated and individual silver particles in said areas for data storage, the activity of said solvent permitting chemical development of the surface latent by the weak developing agent while simultaneously all of the undeveloped and unexposed silver halide is dissolved by the complexing agent.

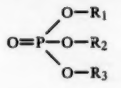
4,278,757

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yasuo Mukunoki; Masakazu Yoneyama; Jiro Yamaguchi; Hideki Naito, and Jun Sasaki, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 10, 1979, Ser. No. 65,496
Claims priority, application Japan, Aug. 10, 1978, 53-97575
Int. Cl.³ G03C *1/40, 1/10, 1/84, 1/68*
U.S. Cl. 430—512 **19 Claims**

1. In a silver halide photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer and at least one hydrophilic organic colloid layer, said silver halide emulsion layer being the same as or different than said hydrophilic colloid layer and at least one of said silver halide emulsion layer or said hydrophilic organic colloid layer containing a dispersion of a substantially water-insoluble photographic additive dissolved in a solvent, the improvement wherein said solvent comprises a phosphoric acid ester represented by the following general formula (I):



(I)

wherein R_1 represents a saturated alicyclic group; and R_2 and R_3, which may be the same or different, each represents a saturated alicyclic group, an alkyl group or an aryl group.

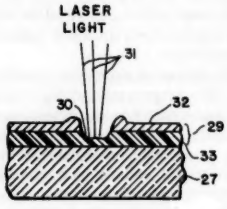
9. The silver halide photographic light-sensitive material of claim 1, wherein said substantially water-insoluble photographic additive is a photographic coupler, an antioxidant, a fade preventing agent, a hardener, an oil-soluble filter dye, an oil-soluble ultraviolet absorbing agent, a fluorescent brightening agent, a development inhibitor releasing compound, a developing agent, a diffusible dye releasing coupler, a diffusible dye releasing redox compound or a dye developing agent.

4,278,758

PROCESS FOR MAKING A REFLECTIVE DATA STORAGE MEDIUM

Jerome Drexler, Los Altos Hills, and Eric W. Bouldin, Woodside, both of Calif., assignors to Drexler Technology Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 55,270, Jul. 6, 1979. This application Sep. 6, 1979, Ser. No. 72,908
Int. Cl.³ G03C *1/76;* **G02B** *27/22;* **G03C** *1/48, 5/24*
U.S. Cl. 430—616 **16 Claims**



1. A method of making a reflective electrically non-conducting data storage medium comprising,

forming an areawise, latent image exposure in a photosensitive silver-halide emulsion layer disposed on a substrate, thereby defining an area for data storage, said exposure creating an areawise layer of silver precipitating nuclei having a volume concentration gradient through the depth of the emulsion, said emulsion having unexposed photosensitive silver-halide remaining therein in concentrations inversely related to said nuclei concentration,

contacting said unexposed photosensitive silver-halide emulsion layer with an aqueous monobath comprising a weak silver-halide developing agent for developing said latent image and a rapid-acting silver-halide solvent for reacting with unexposed and undeveloped silver halide to form soluble silver ion complexes which are transported by chemical diffusion transfer to said silver-precipitating nuclei of said latent image where silver of said silver ion complexes is precipitated and adsorbed on said nuclei in the presence of said developer acting as a reducing agent, thereby forming a reflective electrically non-conducting silver negative of said latent image in said area for data storage, and

heating said reflective electrically non-conducting data storage medium at least to 250° C. until the reflectivity of the surface increases by at least 5% of the initial reflectivity percentage.

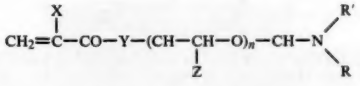
4,278,759

PROCESS OF PREPARING PHOTOGRAPHIC SILVER HALIDE EMULSION

Wilhelm Saleck, Schildgen; Erich Wolff, and Erwin Müller, both of Leverkusen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert A.G., Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 845,137, Oct. 25, 1977, abandoned, which is a continuation of Ser. No. 657,217, Feb. 11, 1976, abandoned. This application May 24, 1979, Ser. No. 42,082
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1975, 2506405
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—627 **2 Claims**

1. In the process for the preparation of a photographic silver halide emulsion by precipitation and physical ripening of the silver halide in the presence of a peptisation agent, followed by flocculation of the emulsion, washing if necessary, redispersion and chemical ripening, the improvement according to which the precipitation of the silver halide is carried out in the presence of a hydrophilic colloid binder for the silver halide emulsion containing from 50% to 100% of a homopolymer of the compound of the following formula:



in which

X represents hydrogen or an alkyl group containing 1 to 6 carbon atoms,

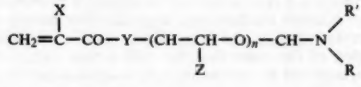
Y represents —NH—, $-NC_mH_{2m+1}$—(m=1-6) or —O—,

Z represents hydrogen or an alkyl group containing 1 to 4 carbon atoms,

R and R′ may be the same or different and represent an alkyl group containing 1 to 18 carbon atoms or a cycloalkyl group containing 5 to 7 carbon atoms or R and R′ together with the nitrogen atom may represent a heterocyclic ring which may also contain other heteroatoms, and

n represents an integer of from 1 to 10

or, a copolymer of a monomer mixture with 2 to 50 mol% of a compound of the following formula:



in which

X represents hydrogen or an alkyl group containing 1 to 6 carbon atoms,

Y represents —NH—, $-NC_mH_{2m+1}$—(m=1-6) or —O—,

Z represents hydrogen or an alkyl group containing 1 to 4 carbon atoms,

R and R′ may be the same or different and represent an alkyl group containing 1 to 18 carbon atoms or a cycloalkyl group containing 5 to 7 carbon atoms or R and R′ together with the nitrogen atoms may represent a heterocyclic ring which may also contain other heteroatoms, and

n represents an integer of from 1 to 10

the remainder of said binder made up with protective colloid, said homopolymer or said copolymer having a molecular weight ranging from 10,000 to 1,000,000, wherein said compound of said formula when used to form a copolymer is copolymerized essentially with a comonomer which is a water soluble polymerizable monomer compound selected from the group consisting of vinyl pyrridine, vinyl methyl ether, acrylamide and methacrylamide, and compounds of carboxylic acid, sulfonic acid, phosphonic acid and acrylic acid, said emulsion containing said homopolymer or said copolymer in an amount of from 1 g to 200 g per mol o silver halide.

4,278,760

METHOD AND COMPOSITION FOR DETERMINING AN OXIDIZED PYRIDINE CO-ENZYME

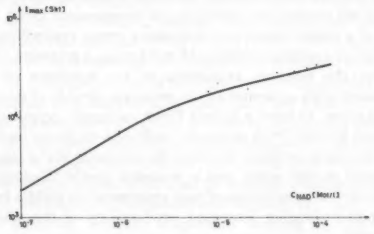
Karl Wulff, Weilheim; Fritz Stähler, and Gerhard Michal, both of Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Jul. 19, 1979, Ser. No. 58,873

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1978, 2833723

Int. Cl.³ C12Q *1/66*

U.S. Cl. 435—8 **14 Claims**



1. Method for the quantitative determination of an oxidized pyridine co-enzyme which comprises reacting a sample containing oxidized pyridine co-enzyme in the presence of its specific alcohol dehydrogenase with an aliphatic alcohol of 8 to 16 carbon atoms, oxidizing the aldehyde formed with reduced flavine mononucleotide and oxygen in the presence of luciferase and of the particular FMN-reductase which is independent of the co-enzyme to be determined and of the reduced substrate co-enzyme of the latter, and measuring the resulting light emission as a measure of the initial oxidized pyrizine co-enzyme content.

8. Reagent for the determination of an oxidized pyridine co-enzyme comprising

luciferase;

FMN reductase;

an aliphatic alcohol of 8 to 16 carbon atoms;

a reduced co-enzyme;

an alcohol dehydrogenase specific for the co-enzyme to be determined;

flavine-mononucleotide (FMN); and

a buffer.

4,278,761

ENZYME ASSAY AND KIT THEREFOR

John W. Hastings, Constance, Fed. Rep. of Germany, and Shiao-Chun Tu, Houston, Tex., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Dec. 26, 1979, Ser. No. 107,439

Int. Cl.³ C12Q *1/6*; C12N *11/18, 11/14, 11/02*

U.S. Cl. 435—8 **7 Claims**

2. Composition comprising a single immobilized enzyme of a pair selected from the group consisting of water-soluble glycolytic enzyme pairs, said enzyme being covalently bonded to a water-insoluble support and being the sole enzyme of said pair covalently bonded to said support and the other enzyme of said pair being bound to said immobilized enzyme.

3. The method of assaying an enzyme of a water-soluble glycolytic enzyme pair or a substrate of one of said enzymes which comprises:

providing one enzyme of said pair immobilized on a water-insoluble support,

bringing said immobilized enzyme into contact with a solution containing the other enzyme of said pair and the substrates of said enzymes, whereby said other enzyme is bound to said immobilized enzyme and reactions between said substrates are catalyzed by said enzymes,

the amount of each said enzyme and each said substrate except for the enzyme or substrate to be assayed being in excess of the stoichiometric amount, and

measuring the amount of at least one product of the last said reaction.

4,278,762

METHOD FOR THE QUANTITATIVE DETERMINATION OF PLASMINOGEN ACTIVATORS

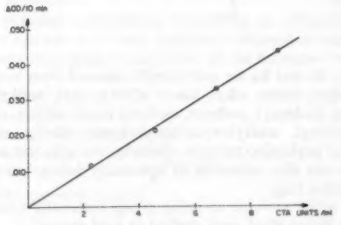
Lars G. Svendsen, Reinach BL., Switzerland, assignor to Pentapharm AG, Basel, Switzerland

Division of Ser. No. 798,426, May 19, 1977, Pat. No. 4,190,574. This application Sep. 11, 1979, Ser. No. 74,551

Claims priority, application Switzerland, May 28, 1976, 006816/76

Int. Cl.³ C12Q *1/56*

U.S. Cl. 435—13 **5 Claims**



1. A method for the quantitative determination of plasminogen activators, inhibitors thereof and plasminogen preactivators, and trypsin, trypsin inhibitors and trypsinogen in human and other mammal body fluids and tissue extracts, which comprises:

(1) reacting said body fluids or tissue extracts with a substrate which has the following structure:

$$R^1—X—Y—Z—NH—R^2$$

wherein X represents a group having the formula

$$—NH—\underset{\displaystyle R^3}{\underset{|}{CH}}—CO—$$

in which R^3 is a straight or branched alkyl radical having 1 to 7 carbon atoms or a cyclohexyl or cyclohexylmethyl

radical, Y represents a seryl group or a glycyl group, Z represents an arginyl group, R^1 represents hydrogen or an acyl or sulfonyl group and R^2 represents an aromatic hydrocarbon radical optionally carrying substituents which permit chromophoric or fluorescent activity, -NH-R^2 being a chromophoric or fluorescent group, and which has the property to release a split product of formula NH_2R^2 under the action of plasminogen activators, and

(2) measuring by photometric, spectrophotometric or fluorescence-photometric methods the quantity of the split product NH_2R^2 formed by the hydrolytic action of the biologically active factors on the substrate.

4,278,763

DIAGNOSTIC AGENTS FOR THE DETECTION OF PROTEOLYTIC ENZYMES

Dieter Berger, Viernheim; Franz Braun, Rimbach; Werner Güthlein, Mannheim; Manfred Kuhr, Mannheim, and Wolfgang Werner, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

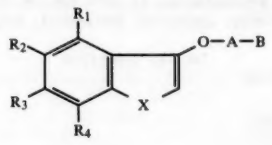
Filed Nov. 30, 1979, Ser. No. 99,180

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1978, 2854987

Int. Cl.³ C12Q *1/38*

U.S. Cl. 435—23 **28 Claims**

28. Method of detecting proteolytic enzymes which method comprises contacting a sample suspected of containing a proteolytic enzyme with a diagnostic agent comprising an absorbent carrier, a film layer, a powder mixture, a lyophilizate, a solution or a reagent tablet, containing at least one chromogen and an appropriate buffer substance, at least one chromogen having been selected from the group consisting of indoxylamino acid esters, thioindoxylamino acid esters and peptide esters of the formula



wherein

R_1, R_2, R_3 and R_4 are individually selected from hydrogen, halogen, lower alkyl, lower alkoxy, aryl, aralkyl, aralkoxy, hydroxyl, carboxy, carboxy lower alkoxy, aralkoxycarbonyl, aralkyloxycarbonyl lower alkoxy, nitro or lower acylamino radicals, whereby two adjacent substituents can also represent an optionally halogenated fused benzene ring;

X is a sulfur atom or an imino group optionally substituted by a lower alkyl, aryl, aralkyl or acyl radical;

A is an amino acid or peptide residue; and

B is a nitrogen protective group.

4,278,764

PROCESS FOR PREPARING CITRIC ACID BY FERMENTATION OF CARBOHYDRATES

Claudio Rottigni, and Giuliano Cardini, both of Milan, Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

Filed Oct. 25, 1979, Ser. No. 88,303

Claims priority, application Italy, Oct. 27, 1978, 29160 A/78

Int. Cl.³ C12P *7/42*

U.S. Cl. 435—144 **7 Claims**

1. In a process for preparing citric acid from hydrolized carbohydrates by submerged fermentation under aerobic conditions in a broth containing yeasts of the genus Candida under controlled temperature conditions and at a pH value of from 5 to 7 maintained by adding measured quantities of calcium hydroxide during the fermentation operation, in which the fermentation broth containing citric acid in the form of calcium citrate is discharged during or at the end of the fermentation operation to recover said citric acid, the improvement which comprises subjecting at least part of the fermentation broth thus discharged to centrifuging to separate calcium citrate from a liquid phase containing yeast cells, subjecting said liquid phase to a further centrifuging to separate said cells from a residual broth, and recycling the yeast cells thus recovered for use in a further fermentation operation, thereby achieving by means of the use of said recycle cells an improvement in the yield and output of citric acid in said further fermentation operation.

4,278,765

METHOD FOR PREPARING STRAINS WHICH PRODUCE AMINOACIDS

Vladimir G. Debabov, ulitsa Miklukho-Maklaya, 43, kv. 57; Jury I. Kozlov, Mikroraion 2, korpus 3, kv. 178; Nelli I. Zhdanova, Leningradskoe shosse, 112, korpus 3, kv. 748; Evgeny M. Khurges, ulitsa Tikhvinskaya, 1/13, kv. 16; Nikolai K. Yankovsky, ulitsa Verkhnaya Radischevskaya, 13/15, kv. 59; Mikhail N. Rozinov, 3 Frunzenskaya ulitsa, 6, kv. 161; Rustem S. Shakulov, ulitsa Krasnogo Mayaka, 14, korpus 2, kv. 106; Boris A. Rebentish, ulitsa 11 Sokolnicheskaya, 12, kv. 16; Vitaly A. Livshits, ulitsa Kirovogradskaya, 24, korpus 3, kv. 8; Mikhail M. Gusyatiner, Suschevsky val, 22, kv. 28; Sergei V. Mashko, ulitsa Nizhnaya Pervomaiskaya, 5, kv. 16; Vera N. Moshentseva, ulitsa Krupskoi, 5, kv. 67; Ljudmila F. Kozyreva, 4 Novopodmoskovny pereulok, 4, kv. 80, and Raisa A. Arsatiants, Mikroraion 2, korpus 3, kv. 178, all of Moscow, U.S.S.R.

Filed Jun. 28, 1979, Ser. No. 52,744

Claims priority, application U.S.S.R., Jun. 30, 1978, 2639616

Int. Cl.³ C12N *15/00*

U.S. Cl. 435—172 **4 Claims**

1. A method for preparing bacterial strains which produce aminoacids comprising combining a chromosome DNA fragment of a donor bacterium containing genes controlling the synthesis of a selected aminoacid and having a mutation which destroys the negative regulation of the synthesis of said aminoacid, with a plasmid DNA molecule capable of ensuring amplification, to form a hybrid DNA molecule; transforming with said hybrid DNA molecule, cells of a recipient bacterial strain having a mutation blocking the synthesis of the selected aminoacid in said strain and a mutation partly blocking the related step of metabolism of said aminoacid, to yield a bacterial strain possessing increased productivity of the selected aminoacid.

4,278,766

MUTANT MICROORGANISMS USEFUL FOR THE PRODUCTION OF SINGLE CELL PROTEIN AND AMINO ACIDS

Vadake R. Srinivasan, Baton Rouge, La., and Ye-Chin Choi New Haven, Conn., assignors to Louisiana State University Foundation, Baton Rouge, La.

Continuation-in-part of Ser. No. 718,974, Aug. 30, 1976, Pat. No. 4,104,124. This application Nov. 8, 1977, Ser. No. 849,695

Int. Cl.³ C12N *1/20*

U.S. Cl. 435—253 **2 Claims**

1. A biologically pure culture of cellulase-elaborating bacteria of mutant microorganisms of Cellulomonas (ATCC-21399) which have the ability to excrete L-glutamic acid or L-lysine, or both, when the mutant microorganisms are grown in a fermentation medium in the substantial absence of yeast extract on an assimilable source of carbon, and supplied with nitrogen and mineral nutrients, in the presence of oxygen at temperatures ranging from about 20° C. to about 40° C.

4,278,767

FIRE-RETARDANT MONOCARBOXYLIC ACID COPOLYMERS

Adolph V. DiGiulio, and Jack N. Bauer, both of Pittsburgh, Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Filed May 7, 1980, Ser. No. 147,037
Int. Cl.[3] C08V *9/06, 9/12*
U.S. Cl. 521—88 7 Claims

1. A process for making fire-retardant foams consisting of dryblending a mixture of (a) a copolymer of 70 to 95 mole percent of a monovinyl aromatic monomer and 5 to 30 mole percent of an ethylenically unsaturated monocarboxylic acid monomer; (b) from 0.5 to 10 percent by weight of water; (c) from 10 to 20 parts per hundred parts of copolymer of an at least tri-brominated diphenylether; and (d) 4 to 8 parts per hundred parts of copolymer of a metal oxide synergist for the ether until an intimate blend is obtained; heating the blend to a temperature of between 125° and 190° C. under sufficient pressure to prevent foaming of the blend; releasing the pressure to allow the blend to expand to a foam of density between 1 and 10 pounds per cubic foot; and cooling the resultant foam to room temperature.

4,278,768

RUBBER-MODIFIED FIRE-RETARDANT ANHYDRIDE COPOLYMERS

Adolph V. DiGiulio, and Jack N. Bauer, both of Pittsburgh, Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Filed May 7, 1980, Ser. No. 147,666
Int. Cl.[3] C08J *9/06, 9/12*
U.S. Cl. 521—88 7 Claims

1. A process for making fire-retardant foams consisting of blending a mixture of (a) a rubber-modified copolymer of 5 to 40 weight percent of a rubber selected from the group consisting of homopolymers of conjugated dienes, copolymers of said dienes with up to 50 weight percent of one or more monoolefinically unsaturated monomers, ethylene-propylene-diene terpolymer rubbers, acrylate diene copolymer rubbers, and mixtures thereof and 95–60 weight percent of a copolymer of 50 to 95 mole percent of a monovinyl aromatic monomer and 5 to 50 mole percent of the anhydride of an ethylenically unsaturated dicarboxylic acid monomer; (b) from 0.5 to 10 percent by weight of water; (c) from 10 to 20 parts per hundred parts of copolymer of an at least tri-brominated diphenylether; and (d) 4 to 8 parts per hundred parts of copolymer of a metal oxide synergist for the ether until an intimate blend is obtained; heating the blend to a temperature of between 125° and 190° C. under sufficient pressure to prevent foaming of the blend; releasing the pressure to allow the blend to expand to a foam of density between 1 and 10 pounds per cubic foot; and cooling the resultant foam to room temperature.

4,278,769

BLOWING AGENT CONCENTRATE

Peter Gebauer, Troisdorf, and Karl G. Sturm, St. Augustin, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 774,095, Mar. 3, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,761
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1976, 2608925
Int. Cl.[3] C08J *9/00*
U.S. Cl. 521—90 37 Claims

1. A blowing agent concentrate consisting of a chemical blowing agent and a thermoplastic vehicle therefor, said vehicle being a saturated polyester or copolyester having a crystalline melting point between 100° C. and 220° C. and a reduced viscosity between 0.4 dl/g and 1.6 dl/g, said chemical blowing agent being present in said blowing agent concentrate in an amount of at least 5 weight percent.

4,278,770

STABILIZATION OF HIGH RESILIENCE POLYURETHANE FOAM BY INCLUDING IN THE REACTION MIXTURE A POLYOL CONTAINING AN EFFECTIVELY DISPERSED FINELY DIVIDED SOLID PARTICULATE MATERIAL

Kiran B. Chandalia, Cheshire, and Henry G. Barnowski, Durham, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 898,274, Apr. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 881,297, Feb. 27, 1978, abandoned. This application Jan. 25, 1979, Ser. No. 6,951
Int. Cl.[3] C08G *18/14*
U.S. Cl. 521—99 15 Claims

1. In a process for preparing a high resilience polyurethane foam from a reaction mixture comprising:

(a) a polyether polyol having a molecular weight of at least about 1,500, a polyhydroxy alcohol nucleus having a functionality from about 2 to about 8, polyoxyalkylene chain segments attached to said nucleus, and a ratio of primary to secondary hydroxyl end groups ranging from about 1.5:1 to about 5.5:1;

(b) an organic polyisocyanate;

(c) a foaming agent; and

(d) a reaction catalyst;

the improvement characterized by including in said reaction mixture a polyol containing a proportion of an effectively dispersed finely divided solid particulate material, said particulate material having, prior to dispersion in said polyol, an average primary particle size of about 0.007 to about 10 microns and a pH ranging from about 3 to about 5, and further having, in dispersion in said polyol, an effective maximum particle size in dispersion of less than about 50 microns.

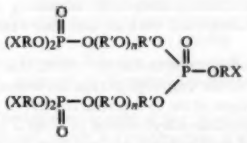
4,278,771

FLAME RETARDANT COMPOSITIONS

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 49,999, Jun. 18, 1979, Pat. No. 4,242,288. This application Apr. 25, 1980, Ser. No. 143,652
Int. Cl.[3] C08G *18/14*
U.S. Cl. 521—107 6 Claims

1. A polymer composition containing an effective flame retardant amount of a flame retardant composition containing as its major ingredient a compound of the formula:



wherein R represents an alkylene radical of from 2 to about 10 carbon atoms and the halosubstituted derivatives thereof, R' represents an alkylene radical of from 2 to 3 carbon atoms, X represents a halogen of chlorine or bromine and n represents an integer of from 1 to 5.

4,278,772

SEMI-FLEXIBLE FOAM POLYMER USED IN PACKAGING

Robert J. Raynor, North Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jul. 31, 1980, Ser. No. 174,071
Int. Cl.[3] C08G *18/14*
U.S. Cl. 521—110 10 Claims

1. A semi-flexible foam polymer having a density of from about 0.3 to about 2 pounds per cubic foot, said polymer being prepared from a reaction mixture having an over-all index of

about 10 to about 600, wherein said reaction mixture comprises:

(a) a polymeric polyisocyanate having an average functionality of about 2.5 to about 3.5;

(b) water in a proportion of about 2 to about 43 parts per every 100 parts by weight of total polyisocyanate in said reaction mixture;

(c) an amine catalyst; and

(d) a non-hydrolyzable silicon-based surfactant in a proportion of about 0.5 to about 12 parts per every 100 parts by weight of total polyisocyanate in said reaction mixture; and

wherein said reaction mixture is substantially free of a polyol.

4,278,773

DISPERSIBLE COMPOSITIONS OF FLUOROCARBON RESINS

Rolf Kleber, Neu-Isenburg, and Lothar Jaeckel, Flörsheim am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 13,913

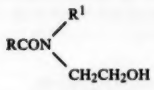
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808157

Int. Cl.³ C08K *5/16*; C08L *27/12*; C08F *14/18*

U.S. Cl. 525—6 **9 Claims**

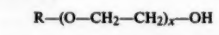
1. Dispersible composition of fluorocarbon resins which consists of

(a) from 1 to 10 parts by weight of a compound of the general formula



in which R is C_8–C_{22} alkyl or alkenyl and R^1 is hydrogen or hydroxyethyl,

(b) from 1 to 10 parts by weight of a compound of the general formula



in which R is C_8–C_{22} alkyl or alkenyl and x is a number of from 15 to 50, and

(c) 1 part by weight of a fluorocarbon resin consisting of at least one fluorinated compound with at least one benzene nucleus and

(1) one or two carbonyl groups as substituents at this benzene nucleus, wherein the carbonyl groups are bound via an oxygen or a nitrogen atom to a perfluoroalkyl or perfluoroalkylene-oxyperfluoroalkyl radical of from 2 to 20 carbon atoms and, if each benzene nucleus does not contain more than one carbonyl group of this kind, the number of benzene nuclei is at least 2, and

(2) further carbonyl groups arranged each in the ortho-position to a carbonyl group, and only to one of the first-mentioned carbonyl groups, the number of the former group not exceeding the number of the first-mentioned carbonyl groups, these additional carbonyl groups being bound each via an oxygen atom at an esterifying bivalent alkylene radical of from 1 to 5 carbon atoms which binds the oxygen atom to

(a) at least one further benzene nucleus substituted in similar manner, or

(b) an alkyl group of from 1 to 5 carbon atoms substituted at least once by a hydroxyl group, a halogen atom or a terminal epoxy ring, or

(c) two alkyl groups of this kind which are bound to each other by an oxygen atom.

4,278,774

BLOCK-COPOLYMERS OF VINYLTRIALKYLSILANE-HEXAORGANOCYCLOTRISILOXANES AND METHOD FOR PRODUCING SAME

Nikolai S. Nametkin, Leninsky prospekt, 13, kv. 11; Sergei G. Durgarian, ulitsa Fersmana, 5, kv. 25; Eduard G. Novitsky, prospekt Mira, 120, kv. 218; Valentina G. Filippova, Shipilovskaya ulitsa, 23, kv. 37; Natalya K. Gladkova, Michurinsky prospekt, 54, korpus 3, kv. 85, and Vladimir V. Teplyakov, Koptevskaya ulitsa, 18b, kv. 175, all of Moscow, U.S.S.R.

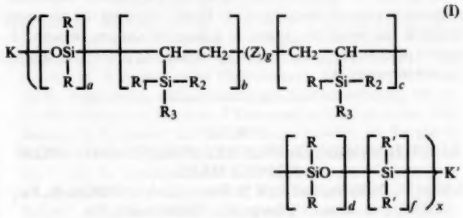
Filed Feb. 15, 1979, Ser. No. 12,451

Claims priority, application U.S.S.R., Feb. 20, 1978, 2584574

Int. Cl.³ C08G *77/42*

U.S. Cl. 525—100 **11 Claims**

1. Block-copolymers of vinyltrialkylsilane-hexaorganocyclotrisiloxane of the formula:



(I)

wherein R, R′ are compounds selected from the group consisting of methyl and phenyl, R_1, R_2, R_3 are each an aliphatic radical containing 1 to 4 carbon atoms, Z is a residue of a dilithium initiator of polymerization of the vinyltrialkylsilane; K is a residue of a monolithium initiator which is a normal or isoalkyl hydrocarbon radical; K′ is a compound selected from the group consisting of hydrogen, $(R)_3Si$ silcarbonic group wherein R is a C_1–C_4 alkyl radical, or a hydrocarbon radical; a=0 to 10^4; b=0 to 10^4; c=10 to 10^4; d=10 to 10^4; f=0 to 1; g=1; x is at least 1, with a molecular mass of from 10^3 to 10^6.

4,278,775

MALEIMIDE-STYRENE COPOLYMER BLEND WITH POLYPHENYLENE OXIDE

Ronald A. Fava, Monroeville, Pa., assignor to Arco Polymers, Inc., Philadelphia, Pa.

Filed Jun. 23, 1980, Ser. No. 161,806

Int. Cl.³ C08L *71/04*

U.S. Cl. 525—132 **4 Claims**

1. A thermoplastic composition for molding of plastic articles consisting of a blend of

A. polyphenylene oxide

B. a resin containing 5 to 35% maleimide and and 86 to 93% styrene

each of components A and B being present in a weight concentration within a range from 35% to 65%.

4,278,776

VULCANIZABLE MIXES BASED ON FLUOROELASTOMERS AND COMPRISING ELASTOMERIC FLUOROPOLYAMIDES AS PROCESSING AIDS

Gastone Mauro; Carlo Lagana; Sergio Geri, all of Milan, and Ezio Strepparola, Treviglio, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jun. 12, 1980, Ser. No. 158,814

Claims priority, application Italy, Jun. 14, 1979, 23572 A/79; Mar. 18, 1980, 20731 A/80

Int. Cl.³ C08L *77/00*

U.S. Cl. 525—178 **5 Claims**

1. Vulcanizable mixes based on elastomeric copolymers of vinylidene fluoride with fluorinated or chlorofluorinated ole-

fins or with fluorinated vinyl ethers, comprising, as processing aid, from 5 to 15 parts by weight, per 100 parts by weight of fluoroelastomer, of a fluorinated polyamide having a structure formed by recurring units represented by the formula:

$$-COCF_2O(CF_2O)_n-(CF_2CF_2O)_m-CF_2CO-N-R-A-NR-$$

wherein:

the CF_2O and CF_2CF_2O units are distributed statistically along the chain;

m and n are integers comprised between 2 and 100;

the sum of n+m is a number comprised between 15 and 100;

the m/n ratio is comprised between 0.2 and 1.5;

A is a bivalent radical selected from the group consisting of alkenyl, cycloalkenyl, arylene, alkylarylene and heterocyclic radicals, and

R is selected from the group comprising hydrogen or an alkyl or phenyl group,

said fluorinated polyamide having an inherent viscosity comprised between 0.1 and 0.6 (dl/g), determined on a 0.3% solution of the polyamide in a mixture of 1,1,2-trichloro-trifluoroethane and dimethylformamide, at 20° C., with a Desreux-Bishoff type free-fall viscosimeter.

4,278,777

GRAFTED POLYMERS AND METHOD OF PREPARING AND USING SAME

Stephen Z. Jakabhazy, Weston, and Laxmidas R. Patel, Chelmsford, both of Mass., assignors to Abcor, Inc., Wilmington, Mass.

Filed Mar. 27, 1980, Ser. No. 134,647

Int. Cl.³ C08F *291/18, 291/06, 291/04*

U.S. Cl. 525—276 **17 Claims**

1. A method of dry-grafting, with high grafting efficiency, a vinyl monomer onto a polymer having an aliphatic carbon-hydrogen group, which method comprises:

admixing into an essentially dry, solvent-swollen, finely-divided, particulate, solid, polymer admixture, wherein the polymer has free radicals formed thereon and the admixture is essentially free of a polymerization initiator, a small grafting amount in incremental portions of a vinyl monomer material to be grafted onto the swollen polymer, the amount of vinyl monomer sufficient to maintain an essentially free-flow, stirrable, particulate admixture, and effecting grafting of the vinyl monomer to the polymer.

4,278,778

SYNERGISTIC PREVULCANIZATION INHIBITOR FOR HALOPOLYMER WITH DIAMINOPROPANE AND CYCLOHEXYLTHIOPHTHALIMIDE

Norman E. Warren, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 28, 1979, Ser. No. 53,139

Int. Cl.³ C08F *8/34, 8/32*

U.S. Cl. 525—346 **8 Claims**

1. An improved heat curable composition comprising an elastomer-forming, chlorine- or bromine-containing halopolymer; a 1,3-diaminopropane or salt thereof; an acid acceptor; a sulfur source; and a prevulcanization inhibitor wherein the improvement comprises providing as the prevulcanization inhibitor a combination of from about 0.1 to 2 parts per hundred parts of the halopolymer of N-(cyclohexylthio)phthalimide and from about 1 to about 3 parts per hundred parts of the halopolymer of N-nitrosodiphenylamine.

4,278,779

AROMATIC POLYAMIDE COMPOSITION

Yasuo Nakagawa, 1-28-4-205, Ozu-cho; Keizo Shimada, 3-1-40, Yamate-cho; Tsutomu Nakamura, 1-28-2, Ozu-cho, and Kichiro Matsuda, 5-17-29, Nishimi, all of Iwakuni-shi, Yamaguchi-ken, Japan

Filed Jul. 19, 1979, Ser. No. 58,920

Claims priority, application Japan, Jul. 31, 1978, 53-92646

Int. Cl.³ C08L *77/00*

U.S. Cl. 525—432 **12 Claims**

1. An aromatic polyamide composition comprising:

(A) 50 to 95% by weight of poly-m-phenylene isophthalamide, and;

(B) 5 to 50% by weight of at least one other aromatic polyamide comprising:

(1) an amine moiety consisting essentially of (a) 35 to 100 molar % of at least one xylylene diamine and, (b) 0 to 65 molar % of at least one other aromatic diamine, and;

(2) an acid moiety consisting essentially of at least one aromatic dicarboxylic acid.

4,278,780

THERMOSETTING RESIN COMPOSITION COMPRISING EPOXY COMPOUND AND REACTION PRODUCT OF UNSATURATED DICARBOXYLIC ACID ANHYDRIDE AND EXCESS DIAMINE

Akio Nishikawa; Hiroshi Suzuki, and Hisashi Kohkame, all of Hitachi, Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Co., Ltd., both of Tokyo, Japan

Filed Jul. 5, 1979, Ser. No. 55,069

Claims priority, application Japan, Jul. 12, 1978, 53/84004

Int. Cl.³ C08L *63/04;* **C08G** *73/10, 73/12*

U.S. Cl. 525—488 **18 Claims**

1. A thermosetting resin composition comprising

(a) a reaction product mixture obtained by melt reacting 2 to 20 moles of a diamine with 1 mole of a dicarboxylic acid anhydride having at least one ethylenic carbon-carbon double bond, and

(b) an epoxy compound having more than one 1,2-epoxy group on the average in the molecule.

4,278,781

CATALYST AND PROCESS FOR THE POLYMERIZATION OF ETHYLENE AND TERMINAL OLEFINS

Gunter Caspari, Wheaton, and David E. Boone, Chicago, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 841,575, Oct. 12, 1977, abandoned, which is a continuation of Ser. No. 662,816, Mar. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 242,235, Apr. 7, 1972, abandoned. This application Apr. 19, 1979, Ser. No. 31,377

Int. Cl.³ C08F *4/02, 10/02*

U.S. Cl. 526—150 **18 Claims**

1. A catalyst component for polymerizing ethylene, a mixture of ethylene and propylene or a mixture of ethylene and butene-1 which consists essentially of the reaction product of a first material which is an organotin compound selected from the group consisting of triphenyltin hydroxide, trimethyltin hydroxide and n-butyl stannonic acid and a second material which is a higher-valent Group IVB, Group VB, or Group VIB transition metal halide, oxyhalide, ester or haloester, said first and second materials being reacted in amounts and under conditions such that the valence state of the Group IVB, Group VB, or Group VIB metal contained in said reaction product is essentially unchanged from that of the Group IVB, VB, or VIB metal contained in said second material.

4,278,782

ALLYL ALCOHOL POLYMERS

John F. Heaps, and Donald M. Gardner, both of Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 1, 1979, Ser. No. 90,378
Int. Cl.[3] C08F 212/08, 216/08, 220/40
U.S. Cl. 526—326 4 Claims

1. A terpolymer of a C_8–C_{12} monovinyl aromatic monomer containing the vinyl group directly attached to the aromatic nucleus, a C_3–C_7 allylic alcohol and an ester of a C_3–C_7 allylic alcohol and a C_7–C_{12} monovalent aromatic acid, wherein the terpolymer contains at least about 40 weight percent of units of the monovinyl aromatic monomer, on average from about 2 to about 4 units of the C_3–C_7 allylic alcohol and at least one unit of the ester of the C_3–C_7 allylic alcohol and the C_7–C_{12} monovalent aromatic acid per molecule and has a number average molecular weight in the range of about 700 to about 3000.

4,278,783

METHOD OF CURING AN ORGANOALKOXYSILANE COMPOUND

Susumu Taniyama, Toyonaka; Goro Shimaoka, Sakai, and Shoichi Inoue, Itami, all of Japan, assignors to Mitsubishi Gas Chemical Company Inc., Tokyo, Japan

Filed Sep. 4, 1979, Ser. No. 72,221
Claims priority, application Japan, Sep. 5, 1978, 53/108756
Int. Cl.[3] C08G 77/04, 77/08
U.S. Cl. 528—23 6 Claims

1. A method of curing an organoalkoxysilane compound characterized by using as a catalyst a phosphite of the formula:

$$(RO)_nP(OH)_{3-n}$$

wherein R is an alkyl group having 1 to 4 carbon atoms and/or an aromatic group; and n is an integer of 1 or 2.

4,278,784

ENCAPSULATED ELECTRONIC DEVICES AND ENCAPSULATING COMPOSITIONS

Ching-Ping Wong, Lawrence Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Feb. 6, 1980, Ser. No. 119,077
Int. Cl.[3] C08G 77/04
U.S. Cl. 528—27 10 Claims

1. A polymeric encapsulating composition comprising a polysilicone having a cryptate ether as part of the polymer chain.

4,278,785

POLYESTER COMPOSITION, PROCESS THEREFOR AND MOLDED ARTICLES THEREFROM

Jerold C. Rosenfeld, Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,464
Int. Cl.[3] C08G 63/66, 63/68, 63/76
U.S. Cl. 528—176 20 Claims

1. In a linear aromatic polyester which comprises residues of a bisphenol and an aromatic dicarboxylic acid and in which the terminal residues of the polyester chain comprise a residue of said dicarboxylic acid, the improvement wherein the end carboxylate groups of said terminal dicarboxylic acid residues comprise a minor, hydrolysis-stabilizing proportion of above about 2 weight percent, based on the polyester, of a carboxylate ester of an aliphatic monofunctional hydrocarbon alcohol of 8 to 45 carbon atoms.

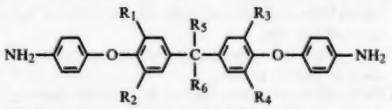
4,278,786

AROMATIC POLYAMIDES CONTAINING ETHER LINKAGES AND PROCESS FOR PRODUCING SAME

Ken Nanaumi, Hitachi; Fusaji Shoji, Mito; Hisashi Kohkame, and Susumu Era, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 853,550, Nov. 22, 1977, abandoned, which is a continuation of Ser. No. 714,199, Aug. 13, 1976, abandoned. This application Jul. 5, 1979, Ser. No. 54,796
Claims priority, application Japan, Aug. 15, 1975, 50/98616
Int. Cl.[3] C08G 69/32, 69/40
U.S. Cl. 528—179 14 Claims

1. An aromatic polyamide polymer produced by polymerization of an aromatic diamine having the general formula:



wherein R_1 through R_4 are the same or different, and are members selected from the group consisting of H, Cl and CH_3, and wherein R_5 and R_6 are the same or different, and are the members selected from the group consisting of H, CH_3, C_2H_5 and C_3H_7, the total carbon number of R_5 and R_6 being no greater than 4; with an equivalent amount of a mixture of terephthalic acid dichloride and isophthalic acid dichloride in molar proportions of from 80:20 to 20:80, said polymer having a reduced viscosity of 0.3 to 1.5 dl/g, and initial weight loss temperature of 380° C. or above, and an initial flow temperature of at least 80° C. lower than the initial weight loss temperature, whereby said aromatic polyamide polymer has melt moldability, in which said polymer is obtained by reacting said diamine and said mixture in a water-immiscible, chemically inert, organic solvent in the presence of an aqueous solution of an alkali-metal hydroxide or carbonate in an amount sufficient to neutralize an acidic substance generated in the reaction.

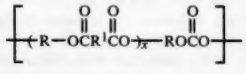
4,278,787

ALTERNATING COPOLYESTERCARBONATE RESINS

Daniel J. Swart, and Jacqueline S. Kelyman, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 916,616, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 795,978, May 11, 1977, Pat. No. 4,105,633. This application Jul. 7, 1980, Ser. No. 166,283
Int. Cl.[3] C08G 63/64
U.S. Cl. 528—191 4 Claims

1. A normally solid alternating copolyester-carbonate having repeating units of the formula:



wherein each R is independently an aromatic hydrocarbylene or inertly substituted hydrocarbylene, R^1 is meta-phenylene or inertly substituted meta-phenylene and x is a number from 0.05 to 10.

4,278,788

REMOVAL OF RESIDUAL CATALYST FROM POLYOLEFIN POLYMERS

James R. Hatfield; Merlin H. Moseman, both of Omaha, Nebr.; James R. Graham, Fountain Valley, Calif., and Thomas J. Hirt, Omaha, Nebr., assignors to InterNorth, Inc., Omaha, Nebr.

Filed Mar. 16, 1979, Ser. No. 21,097
Int. Cl.³ C08F 6/02, 6/08
U.S. Cl. 528—494 6 Claims

1. In a method for reducing the halogen content of a particulate polyolefin formed by catalytic polymerization of an olefin in the presence of a Ziegler-Natta catalyst, wherein the polyolefin in the dry state is contacted at elevated temperature in a gas phase fluidized bed with an inert gas stream containing alkylene oxide and a solvent selected from the group consisting of alcohol and water such that the alkylene oxide reacts with halogens present in the polyolefin to form an alkylene halohydrin, and the alkylene halohydrin is then removed from the polyolefin thereby reducing the halogen content of the polyolefin, the improvement which comprises regenerating the alkylene oxide by contacting the alkylene halohydrin with a hydroxide caustic solution of said solvent at temperature of from about 90° F. (32° C.) to about 160° F. (71° C.), wherein the concentration of the caustic is from about 0.001 N to about 1 N, and recovering alkylene oxide formed by the reaction of the alkylene halohydrin and the caustic solution.

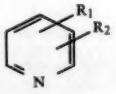
4,278,789

LINCOMYCIN COMPOUNDS

Robert D. Birkenmeyer, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 96,652, Nov. 23, 1979, abandoned. This application May 19, 1980, Ser. No. 148,056
Int. Cl.³ C07H 15/16
U.S. Cl. 536—11 81 Claims

1. A compound of the formula



wherein R_1, which can be singly or multiply substituted in any position of the pyridine ring not already substituted by R_2, is selected from the group consisting of hydrogen, alkyl and substituted alkyl wherein the alkyl portion is from 1 to 8 carbon atoms, inclusive, and isomeric forms thereof, cycloalkyl and substituted cycloalkyl, of from 3 to 8 carbon atoms, inclusive substituted oxygen, substituted nitrogen, halogen, phenyl, and substituted phenyl, $-(CH_2)_n-OH$, $-(CH_2)_n-NR_4R_5$, and branched chain isomers thereof wherein n is an integer of from 1 to 8, inclusive, R_4 and R_5 are H or alkyl of from 1 to 8 carbon atoms, inclusive, and isomeric forms thereof; wherein R_2, which can be singly substituted in any position of the pyridine ring not already substituted by R_1, is

and X is the amino function of a compound selected from the group 7(R)-hydroxy-methyl 1-thio-α-lincosaminide, 7(S)-hydroxy-methyl 1-thio-α-lincosaminide, 7(S)-halo-methyl 1-thio-α-lincosaminide, 7(R)-halo-methyl 1-thio-α-lincosaminide, 7(S)-methoxy-methyl 1-thio-α-lincosaminide, 7-deoxy-7(S)-(methylthio)-methyl 1-thio-α-lincosaminide, 7-deoxy-7(S)-(2-hydroxyethylthio)-methyl 1-thio-α-lincosaminide and 7-deoxy-7(S)-(3-hydroxypropylthio)-methyl 1-thio-α-lincosaminide; and the pharmaceutically acceptable acid-addition salts thereof.

4,278,790

NOVEL CELLULOSE SOLUTIONS

Charles L. McCormick, Hattiesburg, Miss., assignor to Hopkins Agricultural Chemical Co., Madison, Wis.

Continuation-in-part of Ser. No. 929,749, Jul. 31, 1978, abandoned. This application Mar. 7, 1980, Ser. No. 128,014
Int. Cl.³ C08B 11/00; C08L 1/00, 1/02, 1/26
U.S. Cl. 536—84 10 Claims

8. In the method of preparing cellulose derivatives by chemical reactions utilizing the hydroxyl functionality of the cellulose, the improvement which comprises using as the cellulose reactant, a solution of cellulose in lithium chloride and dimethylacetamide.

9. The method of claim 8 in which the cellulose derivative being prepared is a cellulose ether.

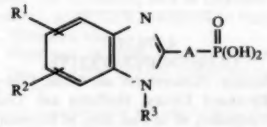
4,278,791

BENZIMIDAZOLYL-2-ALKANE-PHOSPHONIC ACIDS

Artur Botta; Heinz-Joachim Rother, and Günther Teichmann, all of Krefeld-Uerdingen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 101,977
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855659
Int. Cl.³ C09B 23/14; C07F 9/28
U.S. Cl. 542—412 6 Claims

1. A benzimidazolyl-2-alkane-phosphonic acid of the formula



wherein

R^1 and R^2 are identical or different and denote hydrogen, lower alkyl, phenyl, halogen, trifluoromethyl, nitro or lower alkoxy, or together form a fused-on benzene ring,

R^3 denotes hydrogen, lower alkyl or phenyl or benzyl which is optionally substituted by lower alkyl or halogen and

A denotes a straight-chain or branched, saturated or unsaturated bivalent hydrocarbon radical with 1 to 15 carbon atoms, which can be substituted by phenyl which is optionally substituted by lower alkyl or halogen or by carboxyl or the phosphonic acid group,

and its salt with an inorganic base or acid.

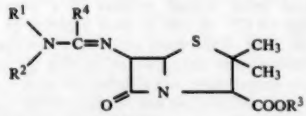
4,278,792

METHOD OF PRODUCING DERIVATIVES OF 6-β-AMIDINOPENICILLANIC ACID

Pietro Cesti, San Matino di Trecate; Leonardo Marsili, and Carmine Pasqualucci, both of Milan, all of Italy, assignors to Archifar Laboratori Chimico Farmacologici S.p.A., Trento, Italy

Filed Mar. 24, 1980, Ser. No. 132,763
Claims priority, application Italy, Apr. 12, 1979, 21809 A/79
Int. Cl.³ C07D 499/04
U.S. Cl. 542—420 4 Claims

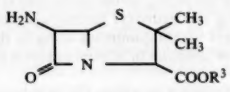
1. A method of producing derivatives of 6-β-amidinopenicillanic acid having the formula



(I)

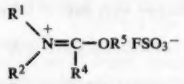
wherein R^1 and R^2 are a C_1–C_4 alkyl group, a C_5–C_6 cycloalkyl

group, or R^1 and R^2 together with nitrogen atom, to which they are bonded, form a seven member heterocyclic ring or a morpholino ring; R^3 is selected from the group consisting of hydrogen and substituted or unsubstituted alkyl; and R^4 is selected from the group consisting of hydrogen and C_1–C_4 alkyl radicals, said method comprising reacting a derivative of 6-aminopenicillanic acid having the formula



(II)

wherein R^3 is as above defined, with a derivative of a disubstituted amide, the reaction being carried out in an inert anhydrous organic solvent selected from the group consisting of methylene chloride and chloroform and in the presence of at least 2 equivalents of a tertiary amine, at a temperature lower than +10° C., wherein said derivative of a disubstituted amide is a complex of a carboxylic acid amide having the formula



(III)

wherein R^1, R^2 and R^4 are as above defined, and R^5 is methyl or ethyl.

4,278,793

CEPHEM DERIVATIVE

Walter Dürckheimer, Hattersheim am Main; Dieter Bormann, Kelkheim; Eberhard Ehlers, Hofheim am Taunus; Elmar Schrinner, Wiesbaden, all of Fed. Rep. of Germany, and Rene Heymes, Romainville, France, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 891,850, Mar. 30, 1978. This application Jul. 21, 1980, Ser. No. 170,839

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1977, 2714880; Apr. 15, 1977, 2716707

Int. Cl.³ C07D *501/56*

U.S. Cl. 544—27 **1 Claim**

1. 7-β-[2-(2-amino-thiazol-4-yl)-2-syn-methoximino-acetamido]-3-(5-carboxymethyl-4-methyl-1,3-thiazol-2yl-thiomethyl)-ceph-3-em-4-carboxylic acid.

4,278,794

PROCESS FOR PREPARING PURE CYANURIC ACID

Karlheinz Wegleitner, Linz; Wilfried Krulla, Traun, and Richard Willim, Linz, all of Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed Jul. 1, 1980, Ser. No. 165,154

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929211

Int. Cl.³ C07D *251/32*

U.S. Cl. 544—192 **3 Claims**

1. In a process for the preparation of pure cyanuric acid by hydrolyzing crude or waste melamine using sulfuric acid as a hydrolyzing agent, the improvement which comprises introducing the crude or waste melamine, at room temperature, with stirring, into 70 to 80% strength sulfuric acid in the equivalent amount for formation of ammonium bisulfate, heating the reaction mixture under normal pressure to a temperature within the range of 150° to 190° C. over a period of 1 to 2 hours, whilst distilling off the water introduced with the sulfuric acid, and subsequently adding water, cooling the reaction mixture to room temperature, and isolating the pure cyanuric acid product by crystallizing out and filtering off the cyanuric acid, suspending the filtered product in water and filtering again.

4,278,795

PROCESS FOR THE PREPARATION OF PYRENE COMPOUNDS

Horst Harnisch, Much, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

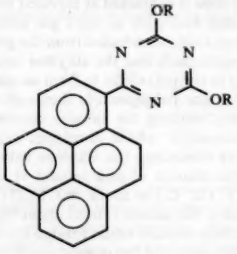
Filed Apr. 21, 1980, Ser. No. 141,833

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923337

Int. Cl.³ C07D *251/16*

U.S. Cl. 544—219 **9 Claims**

1. Process for the preparation of pyrene compounds of the formula



wherein

R represents an optionally substituted alkyl, alkenyl, cycloalkyl, aralkyl or aryl radical, by reaction of cyanuric chloride with pyrene in the presence of an aluminium halide and by further reaction of the intermediate product with an alkali metal alcoholate or phenolate, characterised in that a complex is prepared by reacting an aluminium halide with at least an equivalent amount of cyanuric chloride in an inert solvent, this complex is allowed to act on pyrene and the product is reacted with a compound of the formula

RO—M

wherein

R has the abovementioned meaning and

M represents an alkali metal, in an amount which is at least equivalent for the replaceable halogen atoms.

4,278,796

PIPERAZINES

Camillo Corvi-Mora, Via Borgonuovo 9, Milano, Italy

Continuation of Ser. No. 939,106, Sep. 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 758,725, Jan. 12, 1977, Pat. No. 4,123,530. This application Nov. 28, 1979, Ser. No. 98,091

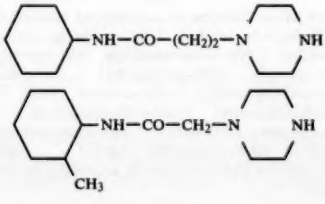
Claims priority, application Italy, Jan. 23, 1976, 19517 A/76

The portion of the term of this patent subsequent to Oct. 31, 1995, has been disclaimed.

Int. Cl.³ C07D *295/14;* **A01K** *31/495*

U.S. Cl. 544—400 **7 Claims**

1. A piperazine derivative selected from the group consisting of compounds of the formulae



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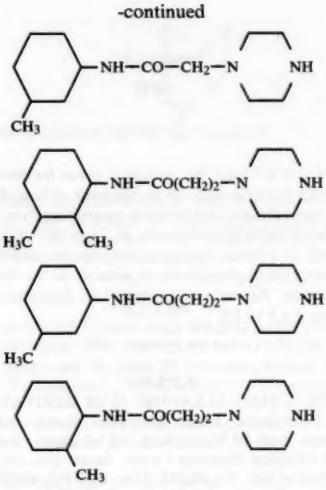


and the pharmaceutically acceptable salts thereof with acids.

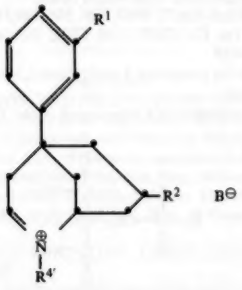
4,278,797

INTERMEDIATES TO PHENYLMORPHANS AND METHOD OF PREPARATION THEREOF

Dennis M. Zimmerman, Mooresville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 19,527, Mar. 12, 1979, abandoned. This application May 19, 1980, Ser. No. 150,763
Int. Cl.[3] C07D *221/22*
U.S. Cl. 546—112 17 Claims

1. A compound of the formula



wherein:

R^1 is hydrogen, hydroxy or C_1–C_3 alkoxy;

R^2 is hydrogen, C_1–C_5 alkyl or CH_2C_2–C_4 alkenyl;

$R^{4'}$ is C_1–C_{10} alkyl, C_1–C_3 alkylphenyl or CH_2C_3–C_6 cycloalkyl; and

$B^{\ominus}$ is an anion of a protonic acid.

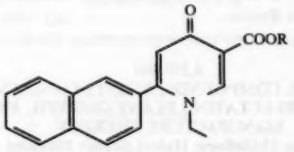
4,278,798

1-ETHYL-1,4-DIHYDRO-6-(2-NAPHTHYL)-4-OXONICOTINIC ACID AND ESTERS THEREOF

Alexander E. Wick, Le Mesnil-le Roy, France, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 7, 1980, Ser. No. 166,506
Claims priority, application Switzerland, Jul. 13, 1979, 6555/79
Int. Cl.[3] C07D *213/55*
U.S. Cl. 546—298 3 Claims

1. A compound of the formula



I

wherein R is hydrogen or C_{1-6}-alkyl,
or an alkali metal, alkaline earth metal, ammonium or ethanolamine salt thereof.

4,278,799

CONTINUOUS PROCESS FOR THE PRODUCTION OF DICHLOROACETAMIDES

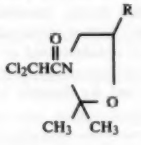
Alan H. Benke; Hue T. Morris, both of Oakland, and Louie A. Nady, Berkeley, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 28, 1980, Ser. No. 144,500
Int. Cl.[3] C07C *102/00*; C07D *263/04*
U.S. Cl. 548—215 13 Claims

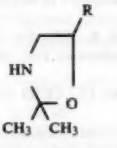
1. A continuous process for the production of dichloroacetamides selected from the group consisting of

(a) N,N-diallyldichloroacetamide; and

(b) N-dichloroacetyl oxazolidines having the formula



in which R is hydrogen or C_1–C_3 alkyl, by reaction of dichloroacetyl chloride with, respectively, N,N-diallylamine or an oxazolidine having the formula



in which R is hydrogen or C_1–C_3 alkyl, in the presence of an aqueous solution of sodium hydroxide, comprising the steps of:

(a) continuously mixing the dichloroacetyl chloride, aqueous solution of sodium hydroxide and either N,N-diallylamine or the oxazolidine by continuously introducing these substances into a circulating liquid medium to form a reaction mixture;

(b) continuously introducing the reaction mixture into a non-agitated reactor;

(c) retaining the reaction mixture in the reactor for a sufficient time such that there occurs separation of the

mixture into an aqueous phase comprising brine and an organic phase comprising the crude desired product;

(d) continuously withdrawing the aqueous phase from the reactor;

(e) continuously withdrawing one portion of the organic phase containing N,N-diallyldichloroacetamide, or an N-dichloroacetylated oxazolidine from the reactor;

(f) recovering the desired product from the organic phase withdrawn in step (e); and

(g) continuously withdrawing a second portion of the organic phase from the reactor and continuously recycling it to step (a) to serve as the circulating liquid medium therein.

4,278,800

γ-AZOLYL COMPOUNDS, AGENTS CONTAINING THEM FOR REGULATING PLANT GROWTH, AND THE MANUFACTURE THEREOF

Costin Rentzea, Heidelberg; Hubert Sauter; Eberhard Ammermann, both of Ludwigshafen; Gerd Heilen, Speyer, and Johann Jung, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

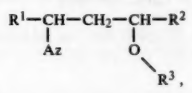
Filed Oct. 1, 1979, Ser. No. 80,527

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845254

Int. Cl.³ C07D *249/08, 249/04*

U.S. Cl. 548—262 **2 Claims**

1. A γ-azolyl compound of the formula



I,

wherein R^1 is unsubstituted phenyl or phenyl substituted by fluoro, chloro, bromo, nitro, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or by alkenyl of 1 to 4 carbon atoms; R^2 is alkyl of 1 to 8 carbon atoms; R^3 is alkyl of 1 to 8 carbon atoms, unsubstituted or chloro-substituted alkenyl of 2 to 5 carbon atoms, alkynyl of 3 to 4 carbon atoms, benzyl which is unsubstituted or substituted by fluoro, chloro, bromo, nitro, trifluoromethyl, or by alkyl or alkoxy of 1 to 4 carbon atoms and Az denotes 1,2,4-triazolyl or 1,2,3-triazolyl.

4,278,801

PREPARATION OF 5-HYDROXYMETHYLIMIDAZOLES

Uwe Kempe, Limburgerhof; Toni Dockner, Meckenheim; Anton Frank, and Helmut Karn, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

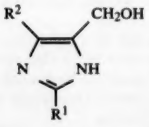
Filed Feb. 8, 1980, Ser. No. 119,959

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908212

Int. Cl.³ C07D *233/64*

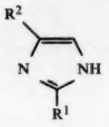
U.S. Cl. 548—342 **4 Claims**

1. A process for the preparation of a 5-hydroxymethylimidazole of the formula 1



1

where R^1 is hydrogen or alkyl of 1 to 18 carbon atoms, phenyl, benzyl or β-phenylethyl, and R^2 is alkyl of 1 to 18 carbon atoms or phenyl, wherein an imidazole of the formula 2



2

where R^1 and R^2 have the meanings given for formula 1, is reacted with formaldehyde or an oligomer of formaldehyde is aqueous hydrochloric acid solution, containing from 5 to 18% by weight of hydrogen chloride, at from 80° to 160° C., if appropriate in a closed system under pressure, and the resulting 5-hydroxymethylimidazole is isolated in the form of its hydrochloride, the ratio of imidazole to hydrogen chloride being from 1:1.5 to 1:5.

4,278,802

NOVEL α-THIO-ALKANOIC ACID DERIVATIVES

Genichi Tsuchihashi, Tama; Katsuyuki Ogura, and Shuichi Mitamura, both of Sagamihara, all of Japan, assignors to Sagami Chemical Research Center, Japan

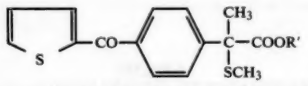
Division of Ser. No. 20,231, Mar. 13, 1979, which is a continuation of Ser. No. 843,343, Oct. 18, 1977, abandoned. This application Jun. 4, 1980, Ser. No. 156,349

Claims priority, application Japan, Oct. 18, 1976, 51-123903; Oct. 18, 1976, 51-123904; Dec. 27, 1976, 51-156358; Dec. 27, 1976, 51-156360

Int. Cl.³ C07D *333/48;* **A61K** *31/38*

U.S. Cl. 549—72 **1 Claim**

1. Alpha-methylthio-α-[p-(2-thienylcarbonyl)phenyl]propionic acid and its ester of the formula



wherein R' represent H or C_1–C_4 alkyl.

4,278,803

PREPARATION OF 2-METHYLENE-1,3-PROPANEDIAMIDE

Howard C. Haas, Arlington; Stanley J. Jasne, Andover, both of Mass., and Robert D. Moreau, Nashua, N.H., assignors to Polaroid Corporation, Cambridge, Mass.

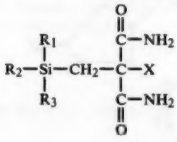
Filed Jan. 7, 1980, Ser. No. 109,811

Int. Cl.³ C07F *7/08;* **C07C** *102/00*

U.S. Cl. 556—419 **16 Claims**

1. A process for preparing 2-methylene-1,3-propanediamide, which comprises:

providing a solution of a compound of the formula



wherein R_1, R_2, and R_3 can each independently be lower alkyl of from 1 to 10 carbon atoms, aryl, alkaryl, aralkyl, or halogen, and X is an electron-accepting leaving group, in an inert, aprotic organic solvent;

subjecting said compound in said solution to β-elimination reaction conditions effective to eliminate the silyl group

and the electron-accepting leaving group

—X

from said compound to form a double bond between those carbon atoms to which the silyl group and the electron-accepting leaving group were bonded, thereby forming 2-methylene-1,3-propanediamide.

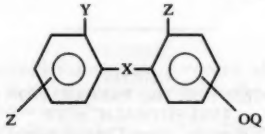
4,278,804

ULTRAVIOLET LIGHT ABSORBING AGENTS AND COMPOSITIONS AND ARTICLES CONTAINING SAME

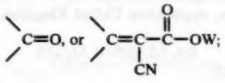
Bruce A. Ashby, and Siegfried H. Schroeter, both of Schenectady, N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed May 30, 1980, Ser. No. 154,622
Int. Cl.³ C07F 7/18, 7/09
U.S. Cl. 556—436 **3 Claims**

1. An ultraviolet light absorbing agent, comprising a compound having the formula:



wherein:
X is



Y is H or OH;
Z is H, OH, OQ or OW, where at least one Z is OH if Y is H;
Q is $—CH_2(CH_2)_nSi(R_2)_x(OR_1)_y$; and
W is $—C_mH_{2m+1}$;
where x=0, 1 or 2, y=1, 2 or 3, x+y=3,
R_1=alkyl or alkanoyl having 1 to 6 carbon atoms,
R_2=alkyl having 1 to 6 carbon atoms, n=0, 1 or 2 and m=1 to 18.

4,278,805

PROCESS FOR THE PREPARATION OF AN ARYL MONO-, DI-, AND/OR POLYURETHANE

Franz Merger, Frankenthal, and Friedrich Towae, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,246
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1979, 2942510
Int. Cl.³ C07C 125/07, 125/077, 125/063
U.S. Cl. 560—25 **12 Claims**

1. A process for the manufacture of an aryl mono-, di- and/or polyurethane comprising the steps of
A. reacting a primary aromatic mono-, di- and/or polyamine with a carbomate of the formula $H_2N—COOR$ in which R represents an unsubstituted or substituted aliphatic, cycloaliphatic or aromatic-aliphatic radical in the presence of an alcohol and at least one compound containing one or more cations of metals of groups IA, IB, IIA, IIB, IIIA, IIIB, IVA, IVB, VA, VB, VIB, VIIB, VIIIB of the periodic system as catalysts, and
B. separating the ammonia and other by-products from the aryl mono, di-, and/or polyurethane.

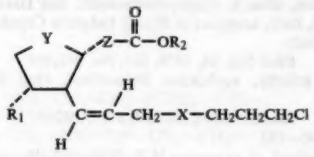
4,278,806

15-DEOXY-16-SUBSTITUTED-19-CHLORO-20-NOR PROSTANE DERIVATIVES OF THE E AND F SERIES

Allan Wissner, Ardsley, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jun. 7, 1979, Ser. No. 46,725
Int. Cl.³ C07C 177/00
U.S. Cl. 560—121 **14 Claims**

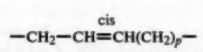
1. An optically active compound of the formula:



wherein
X is:

and
Y is

R_1 is selected from the group consisting of hydrogen and hydroxyl;
R_2 is selected from the group consisting of hydrogen and C_1 to C_6 alkyl;
R_3 is selected from the group consisting of hydrogen, methyl, vinyl and ethynyl;
Z is



wherein p is 2 to 5, the racemic mixture thereof, and when R_2 is hydrogen, the pharmaceutically acceptable salts thereof.

4,278,807

PROCESS FOR PRODUCTION OF 1-NAPHTHYL METHYLCARBAMATE

Eugene J. Boros, South Charleston, and David W. Peck, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sep. 28, 1979, Ser. No. 80,067
Int. Cl.³ C07L 125/067
U.S. Cl. 560—134 **8 Claims**

1. An improvement in the process for producing 1-naphthylmethylcarbamate, by reacting 1-naphthol with methyl isocyanate in the presence of an effective amount of an anion exchange resin catalyst containing a major portion of weak-base functional groups in the form of free amino functional groups and a minor portion of strong-base groups in the form of qua-

ternary ammonium functional groups in catalytically inactive salt form, whereby during reaction said weak-base groups are converted to the catalytically inactive salt form, the improvement which comprises treating said anion exchange resin with an aqueous solution containing ammonium hydroxide and ammonium chloride for a time sufficient to convert said weak-base groups to their catalytically active free amine form while maintaining said strong-base groups in their catalytically inactive salt form.

4,278,808

METHOD OF PREPARING A 3-ALKOXY-2-ALKYL-PROPIONIC ACID ESTER DERIVATIVE AND INTERMEDIATE THEREFOR

Ernst Felder, Riva S. Vitale, Switzerland, and Davide Pitre, Mailand, Italy, assignors to Bracco Industria Chimica S.p.A., Milan, Italy

Filed Sep. 14, 1978, Ser. No. 942,403

Claims priority, application Switzerland, Oct. 31, 1977, 13188/77

Int. Cl.³ C07C *69/734, 69/63, 69/67*

U.S. Cl. 560—183 **6 Claims**

1. A method of preparing a 3-alkyloxy-2-alkyl-propionic acid ester derivative of the formula (I)

$$X-(CH_2)_m-O-CH_2-\underset{\displaystyle C_oH_{2o+1}}{\underset{|}{CH}}-COO-C_nH_{2n+1}$$

which comprises:

(a) reacting an ester of the formula (II)

$$C_oH_{2o+1}-CH_2-COO-C_nH_{2n+1}$$

with carbon monoxide in the presence of an alkali metal alcoholate until a formylation product of the formula (III)

$$Y-O-CH=\underset{\displaystyle C_oH_{2o+1}}{\underset{|}{C}}-COO-C_nH_{2n+1}$$

is formed;

(b) holding said product of formula (III) under condensation conditions with a compound of the formula (IV)

$$X-(CH_2)_m-Z$$

until the acrylic acid analog of said derivative of formula (I) is formed as the compound of the formula (V)

$$X-(CH_2)_m-O-CH=\underset{\displaystyle C_oH_{2o+1}}{\underset{|}{C}}-COO-C_nH_{2n+1}$$

and

(c) hydrogenating said acrylic acid analog to said derivative of formula (I);

(d) in said formulas:

X being chlorine, bromine, or hydroxyl,

Y being hydrogen or alkali metal,

Z being chlorine, bromine, iodine, alkylsulfonyloxy, or arylsulfonyloxy, alkyl and aryl in said alkylsulfonyloxy or arylsulfonyloxy having 1 to 7 carbon atoms, when Y is alkali metal; Z being hydroxyl when Y is hydrogen

m being an integer between 2 and 4,

n and o being integers between 1 and 4.

5. A 3-alkyloxy-2-alkyl-acrylic acid ester derivative of the formula (V)

$$X-(CH_2)_m-O-CH=\underset{\displaystyle C_oH_{2o+1}}{\underset{|}{C}}-COO-C_nH_{2n+1}$$

wherein X is chlorine, bromine, or hydroxyl; m is an integer between 2 and 4, and n and o are integers between 1 and 4.

4,278,809

PROCESS FOR PREPARING 2-ISOCYANATOALKYL ESTERS OF ORGANIC CARBOXYLIC ACIDS

Kenneth A. Burdett, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 15, 1977, Ser. No. 806,805

Int. Cl.³ C07C *67/18*

U.S. Cl. 560—222 **4 Claims**

1. A process for preparing a 2-isocyanatoalkyl ester of an organic carboxylic acid comprising reacting by contacting

(a) an aqueous solution of a 2-oxazoline, and

(b) a solution of phosgene in a water-immiscible organic solvent, in the presence of

(c) a hydrochloric acid acceptor,

wherein (a), (b), and (c) are added essentially simultaneously to a reaction vessel with efficient blending in essentially stoichometric amounts.

4,278,810

PROCESS FOR THE PREPARATION OF TEREPHTHALIC ACID

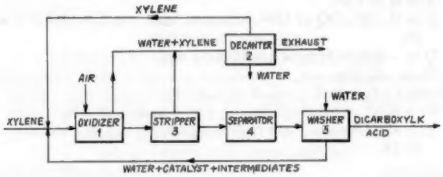
Jacques D. V. Hanotier, Lasne-Chapelle-Saint-Lambert, Belgium, assignor to Labofina S.A., Brussels, Belgium

Continuation of Ser. No. 785,827, Apr. 8, 1977, abandoned, which is a continuation-in-part of Ser. No. 764,981, Feb. 2, 1977, abandoned. This application Apr. 13, 1979, Ser. No. 30,054

Claims priority, application United Kingdom, Oct. 26, 1976, 44459/76

Int. Cl.³ C07C *51/255*

U.S. Cl. 562—412 **23 Claims**



1. A process for producing terephthalic acid comprising the steps of:

providing a substantially liquid, aqueous mixture consisting essentially of p-xylene, p-toluic acid and a solvent consisting essentially of water wherein the molar ratio of p-toluic acid to p-xylene is between about 0.01 and about 100, the molar ratio of water to p-toluic acid is between about 0.4 and about 60, the initial water content of said mixture is at least 5 weight percent and the amount of water is at least sufficient to maintain the p-toluic acid in solution at the reaction temperature;

oxidizing said mixture with a molecular oxygen-containing gas at oxidation conditions and in the presence of an oxidation catalyst comprising at least one heavy metal salt to produce terephthalic acid as the principal product of the oxidation reaction; and

separating terephthalic acid from the oxidized mixture.

4,278,811

PROCESS FOR THE PREPARATION OF TRIS(AMINOMETHYL)PHOSPHINE OXIDE AND ITS TERNARY SALTS

Arlen W. Frank, Slidell; Donald J. Daigle, New Orleans, and Russell M. H. Kullman, Harahan, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 964,854, Nov. 29, 1978, Pat. No. 4,196,149. This application Mar. 10, 1980, Ser. No. 128,440

Int. Cl.³ C07F *9/53*

U.S. Cl. 564—15 **4 Claims**

1. A process for preparing tris(aminomethyl)phosphine oxide which comprises (a) mixing a tris(carbalkoxylaminomethyl)phosphine oxide having the formula $(RO_2CNHCH_2)_3PO$, where R is an alkyl radical having from 1 to 6 carbon atoms, with a reagent selected from the group consisting of alkalis and alkaline earths, in the presence of water, (b) heating the mixture at a temperature of about 100° C. until all three of the acyl-nitrogen bonds are cleaved, (c) destroying the excess reagent with carbon dioxide at a temperature of about 100° C., and (d) recovering the product from the resulting reaction mixture.

4,278,812

19,20-DIDEHYDRO-PG$_2$ SULFONYL AMIDES

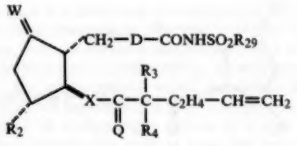
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 26,066, Apr. 2, 1979. This application Oct. 17, 1979, Ser. No. 85,741

Int. Cl.³ A61K *31/18*; C07C *143/75*

U.S. Cl. 564—98 **1 Claim**

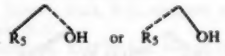
1. A compound of the formula



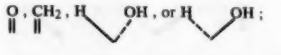
wherein D is

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—CH_2—CH_2—,
(4) trans—$(CH_2)_3$—CH=CH—,

wherein Q is



wherein R_5 is hydrogen or methyl,
R_{29} is alkyl of one to 4 carbon atoms, inclusive,
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is



and wherein X is cis— or trans—CH=CH— or —C≡C—.

4,278,813

19,20-DIDEHYDRO-13,14-DIHYDRO-PG$_2$, SULFONYL AMIDES

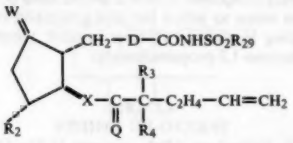
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 26,066, Apr. 2, 1979. This application Oct. 17, 1979, Ser. No. 85,742

Int. Cl.³ A61K *31/18*; C07C *143/75*

U.S. Cl. 564—98 **1 Claim**

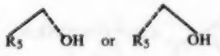
1. A compound of the formula



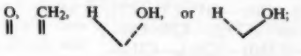
wherein D is

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—CH_2—CH_2—,
(4) trans—$(CH_2)_3$—CH=CH—,

wherein Q is



wherein R_5 is hydrogen or methyl, R_{29} is alkyl of one to 4 carbon atoms, inclusive, wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl; wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is



and wherein X is —CH_2CH_2—.

4,278,814

PREPARATION OF 2-METHYLENE-1,3-PROPANEDIAMIDE BY A FLUORIDE ANION-INITIATED β-ELIMINATION REACTION

Krishna G. Sachdev, Beacon, N.Y., assignor to Polaroid Corporation, Cambridge, Mass.

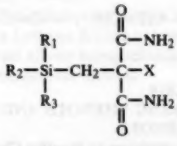
Filed Jan. 7, 1980, Ser. No. 109,812

Int. Cl.³ C07C *102/00*; C07F *7/08*

U.S. Cl. 564—160 **17 Claims**

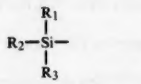
1. A process for preparing 2-methylene-1,3-propanediamide which comprises:

providing a solution of a compound of the formula



wherein R_1, R_2, and R_3 can each independently be lower alkyl of from 1 to 10 carbon atoms, aryl, alkaryl, aralkyl, or halogen, and X is an electron-accepting leaving group, in an inert, aprotic organic solvent;

subjecting said compound in said solution to fluoride anion to effect elimination of the silyl group



and the electron-accepting leaving group

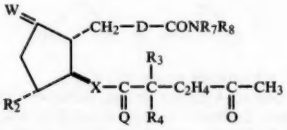
from said compound to form a double bond between those carbon atoms to which the silyl group and the electron-accepting leaving group were bonded, thereby forming 2-methylene-1,3-propanediamide.

4,278,815
19-KETO-PG AMIDES

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, abandoned. This application Mar. 20, 1980, Ser. No. 132,351
Int. Cl.³ C07C *103/19, 103/737;* **A61K** *31/16, 31/165*
U.S. Cl. 564—189 **5 Claims**

1. A compound of the formula



wherein
D is
(1) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CH$_2$—,
(2) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CH$_2$—,
(3) cis—CH$_2$—CH=CH—CH$_2$—CH$_2$—,
(4) trans—(CH$_2$)$_3$—CH=CH—,
(5) —(CH$_2$)$_3$—(CH$_2$)$_g$—CH$_2$—,
(6) —(CH$_2$)$_3$—CH$_2$—CF$_2$—,
(7) —(CH$_2$)$_3$—O—CH$_2$—,
(8) —(CH$_2$)—O—(CH$_2$)$_2$—,
(9) —CH$_2$—O—(CH$_2$)$_3$—,
(10) —(m-Ph)—(CH$_2$)$_2$—, or
(11) —(m-Ph)—O—CH$_2$—,
wherein —(m-Ph)— is inter-meta-phenylene and
wherein g is zero, one, two, or three;
wherein Q is α—OH:β-R$_5$ or α-R$_5$:β-OH, wherein R$_5$ is hydrogen or methyl;
wherein R$_7$ and R$_8$ are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different;
wherein R$_2$ is hydrogen, hydroxyl, or hydroxymethyl,
wherein R$_3$ and R$_4$ are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R$_3$ and R$_4$ is fluoro only when the other is hydrogen or fluoro; and
wherein W is oxo, methylene, α—OH:β—H, or α—H:β—OH; and
wherein X is cis- or trans—CH=CH—, —C≡C— or —CH$_2$CH$_2$—.

4,278,816
PROCESS FOR PREPARING PHENOLS AND THIOPHENOLS

Kyung-sup Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 26, 1977, Ser. No. 827,919
Int. Cl.³ C07C *149/28, 37/055*
U.S. Cl. 568—67 **14 Claims**

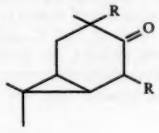
1. A process for producing a phenol and a thiophenol which comprises reacting the corresponding diphenylether compound with hydrogen sulfide in the gaseous phase in contact with a catalyst comprising an absorptive catalyst.

4,278,817
NOVEL PRENYL 4-CARANONES

Dietmar Lamparsky, Wangen, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Filed Nov. 21, 1979, Ser. No. 96,721
Claims priority, application Switzerland, Dec. 5, 1978, 12390/78
Int. Cl.³ C07C *49/417, 49/29*
U.S. Cl. 568—374 **5 Claims**

1. A composition consisting of compounds of the general formula:



I

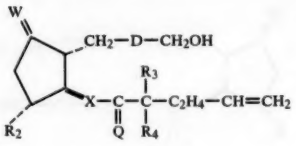
wherein one of the R symbols represents a 3-methyl-2-butenyl group and the other represents a hydrogen atom.

4,278,818
2-DECARBOXY-2-HYDROXYMETHYL-19,20-DIDEHYDRO-13,14-DIHYDRO-PG$_2$ COMPOUNDS

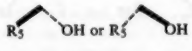
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 26,066, Apr. 2, 1979, Pat. No. 4,243,611. This application Oct. 17, 1979, Ser. No. 85,624
Int. Cl.³ C07C *177/00*
U.S. Cl. 568—379 **1 Claim**

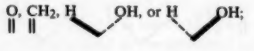
1. A compound of the formula



wherein D is
(1) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CH$_2$—,
(2) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CF$_2$—,
(3) cis—CH$_2$—CH=CH—CH$_2$—CH$_2$—,
(4) trans—(CH$_2$)$_3$—CH=CH—,
wherein g is zero, one, 2 or 3;
wherein Q is



wherein R$_5$ is hydrogen or methyl,
wherein R$_2$ is hydrogen, hydroxyl, or hydroxymethyl;
wherein R$_3$ and R$_4$ are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R$_3$ and R$_4$ is fluoro only when the other is hydrogen or fluoro;
wherein W is



and wherein X is —CH$_2$CH$_2$—.

4,278,819

PROCESS FOR THE PRODUCTION OF ACETALDEHYDE DIMETHYL ACETAL

Joachim Korff, Bornheim; Max Fremery, Wesseling, and Johannes Zimmermann, Weilerswist, all of Fed. Rep. of Germany, assignors to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft, Wesseling, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,415

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1979, 2913677

Int. Cl.³ C07C *43/303, 43/30*

U.S. Cl. 568—594 **8 Claims**

1. A process for the production of acetaldehyde dimethyl acetal by the cobalt-catalysed reaction of methanol with carbon monoxide and hydrogen in the presence of a promoter selected from the group consisting of iodine, bromine, an iodide of hydrogen, methyl, nickel, cobalt, cesium and a bromide of hydrogen, methyl, nickel, cobalt, cesium at elevated temperature and pressure, which comprises using, in addition to cobalt, nickel in the form of its compounds capable to build a carbonyl- or a hydrocarbonyl complex or in the form of finely divided metal as co-catalyst in such a quantity that up to 1% by weight of cobalt and from 0.1 to 5% by weight of nickel are present, based on the methanol used, and the compounds of 3-valent phosphorus normally used as ligands are used as ligand in a molar ratio of nickel to ligand of from 5:1 to 1:3, the reaction being carried out at temperatures in the range from 180° to 230° C., under pressures of from 200 to 500 bars and with a ratio of CO to H_2 of from 2:1 to 1:2.2.

4,278,820

PROCESS FOR PREPARING MONOALKYLENE GLYCOL MONOETHERS

Norio Kametaka, Hiratsuka; Kuniomi Marumo, and Tutomu Nozawa, both of Tokyo, all of Japan, assignors to Showa Denka K.K., Tokyo, Japan

Filed Oct. 3, 1979, Ser. No. 81,619

Claims priority, application Japan, Oct. 5, 1978, 53/121979

Int. Cl.³ C07C *41/03*

U.S. Cl. 568—678 **6 Claims**

1. In a process for producng a monoalkylene glycol monoether comprising reacting an alkylene oxide having 2 to 4 carbon atoms with an aliphatic alcohol having 1 to 4 carbon atoms to produce the corresponding monoalkylene glycol monoether, the improvement which comprises performing said reaction in the presence of a solid catalyst resulting from the exchanging of exchangeable cations of a clay composed mainly of montmorillonite with at least one cation selected from the group consisting of aluminum, chromium, manganese, iron, tin and thorium.

4,278,821

ω,ω-BIS(DIALKYLHYDROXYPHENYL) ALKANOLS AS INTERMEDIATES IN MAKING EFFECTIVE ANTIOXIDANTS

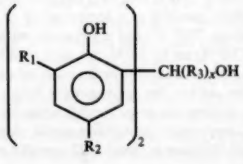
David J. Tracy, Lincoln Park, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Aug. 1, 1979, Ser. No. 62,762

Int. Cl.³ C07C *39/12*

U.S. Cl. 568—723 **6 Claims**

1. A compound of the formula:



wherein

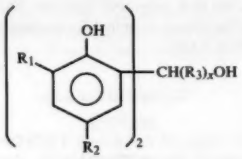
R_1 is a diisobutyl group;

R_2 is alkyl having 1–4 carbon atoms;

R_3 is a straight chain or branched alkylene group having 1–4 carbon atoms; and

x is 1–4.

2. A compound of the formula:



wherein

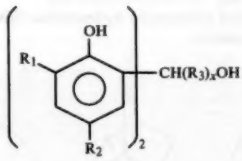
R_1 is a tertiary alkyl group having 4–8 carbon atoms;

R_2 is alkyl having 1–4 carbon atoms;

R_3 is propylene;

x is 1–4.

3. A compound of the formula:



wherein

R_1 is a tertiary alkyl group having 4–8 carbon atoms;

R_2 is alkyl having 1–4 carbon atoms;

R_3 is a straight chain or branched alkylene group having 1–4 carbon atoms; and

x is 3.

4,278,822

LOW MOLECULAR WEIGHT TERMINALLY-FUNCTIONAL SATURATED HYDROCARBON POLYMER

Gary Ver Strate, Matawan, N.J., and Francis P. Baldwin, Coupeville, Wash., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

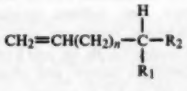
Continuation of Ser. No. 642,294, Dec. 19, 1975, abandoned. This application Nov. 7, 1977, Ser. No. 849,539

Int. Cl.³ C07C *17/28*

U.S. Cl. 570—257 **8 Claims**

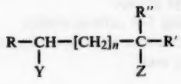
1. The polymeric reaction product of:

(a) a 1-alkene, having at least one trisubstituted carbon atom, said alkene being selected from the group represented by the general formula:



where n is 0 to 10 and R_1 and R_2 may be alkyl, and;

(b) a transfer agent selected from the group represented by the formula:



where Z is halogen, Y is halogen or hydrogen, R′ and R″ are alkyl, R is alkyl, phenyl, or hydrogen, and n is 0 or 1; and wherein said polymeric reaction product contains a saturated backbone, terminal functionality, and an $\overline{M}_n$ of about 500 to 5,000.

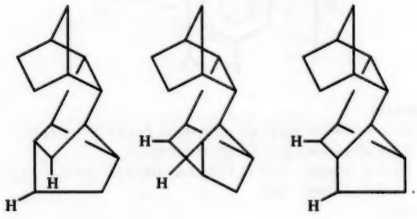
4,278,823

HYDROGENOLYSIS OF 2,5-NORBORNADIENE SATURATED ENDO-ENDO HEXACYCLIC DIMER

Abraham Schneider, Overbrook Hills, and Harry K. Myers, Jr., Aston, both of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Division of Ser. No. 942,860, Sep. 15, 1978. This application Dec. 13, 1979, Ser. No. 102,726
Int. Cl.³ C07C *13/62*
U.S. Cl. 585—22 **1 Claim**

1. A saturated pentacyclic hydrocarbon having one of the following structures:



4,278,824

DEHYDROCOUPLING OF TOLUENE

Samuel J. Tremont, Manchester, Mo.; Alex N. Williamson, Greensboro, N.C., and Arthur J. Solodar, University City, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 10, 1979, Ser. No. 101,921
Int. Cl.³ C07C *2/72*
U.S. Cl. 585—428 **17 Claims**

1. A process for dehydrocoupling toluene which comprises contacting the toluene in the vapor phase at a temperature between about 450° C. and about 650° C. with an inorganic metal/oxygen composition represented by the empirical formula:

$$M_a{}^1M_b{}^2M_c{}^3O_x$$

where M^1 is lead, M^2 is bismuth, and M^3 is at least one element selected from silver, zinc, indium, germanium, phosphorus, thorium, the lanthanides, beryllium, calcium, strontium, barium, and radium, Groups 1a, 3b, 4b, and 8 of the Periodic Table of Elements, and mixtures thereof, and wherein a is 1, b is 0.01 to 10, c is 0.01 to 10, and x is a number taken to satisfy the average valences of M^1, M^2, and M^3 in the oxidation states in which they exist in the composition to yield the dehydrocoupled toluene product.

4,278,825

DEHYDROCOUPLING OF TOLUENE

Samuel J. Tremont, Manchester, Mo., and Alex N. Williamson, Greensboro, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 10, 1979, Ser. No. 101,928
Int. Cl.³ C07C *2/72*
U.S. Cl. 585—428 **18 Claims**

1. A process for dehydrocoupling toluene which comprises contacting the toluene in the vapor phase at a temperature between about 450° C. and about 650° C. with an inorganic metal/oxygen composition represented by the empirical formula:

$$M_a{}^1M_b{}^2M_c{}^3O_x$$

where M^1 is bismuth, M^2 is at least one element selected from the group consisting of indium, beryllium, calcium, strontium barium, and radium, and mixtures thereof, and M^3 is at least one element selected from the group consisting of zinc, germanium, thorium, the lanthanides, Groups 1*a*, 3*b*, 4*b*, and 8 of the Periodic Table of the Elements, and mixtures thereof, and wherein a is 1, b is 0.01 to 10, c is 0.01 to 10, and x is a number taken to satisfy the average valences of M^1, M^2 and M^3 in the oxidation states in which they exist in the composition, the composition having a surface area less than 10 m^2/g, to yield the dehydrocoupled toluene product.

4,278,826

DEHYDROCOUPLING OF TOLUENE

Samuel J. Tremont, Manchester, Mo.; Alex N. Williamson, Greensboro, N.C., and Arthur J. Solodar, University City, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 10, 1979, Ser. No. 101,944
Int. Cl.³ C07C *2/72*
U.S. Cl. 585—428 **17 Claims**

1. A process for dehydrocoupling toluene which comprises contacting the toluene in the vapor phase at a temperature between about 450° C. and about 650° C. with an inorganic metal/oxygen composition represented by the empirical formula:

$$M_a{}^1M_b{}^2M_c{}^3O_x$$

where M^1 is lead, M^2 is antimony, and M^3 is at least one element selected from silver, zinc, gallium, the lanthanides, Groups 1a, 2a, 3b, 4b, and 8 of the Periodic Table of the Elements, and mixtures thereof, and wherein a is 1, b is 0.01 to 10, c is 0.01 to 10, and x is a number taken to satisfy the average valences of M^1, M^2, and M^3 in the oxidation states in which they exist in the composition to yield the dehydrocoupled toluene product.

4,278,827

SHAPE SELECTIVE REACTIONS WITH ZEOLITE CATALYST MODIFIED WITH GROUP IVB METAL

Chin-Chiun Chu, North Brunswick, and Warren W. Kaeding, Westfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 7, 1980, Ser. No. 137,881
Int. Cl.³ C07C *2/68, 5/22, 5/52*
U.S. Cl. 585—467 **26 Claims**

1. A process for conversion of organic compounds, said process comprising contacting said organic compounds with a crystalline zeolite catalyst at a temperature of between about 250° C. and about 750° C. and a pressure within the approximate range of $10^5 N/m^2$ to $10^7 N/m^2$, said zeolite being characterized by a silica to alumina mole ratio of at least 12 and a constraint index within the approximate range of 1 to 12, said zeolite having undergone prior modification by treatment with one or more compounds containing metal elements of Group IVB to deposit thereon at least 0.25 weight percent of such metal element.

4,278,828
NOISE-TEMPERATURE THERMOMETER

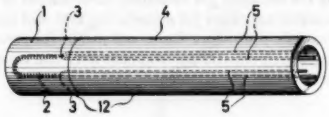
Heinz Brixy, Niederzier, and Helmut Hofer, Korschenbroich, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Dec. 14, 1979, Ser. No. 103,435

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854227

Int. Cl.³ G01K *7/30, 7/04*

U.S. Cl. 136—232 **5 Claims**



1. A noise thermometer temperature sensor comprising:

a housing forming a measuring head;

a noise-thermometer resistance wire received in said head and having a pair of ends forming junctions with respective leads; and

an axially elongated rigid solid ceramic insulator formed by at least one insulating ceramic body in said head, said body being formed with a perforated portion having a plurality of passages respectively traversed by said leads and a web extending axially from said portion toward said noise-thermometer resistance wire between said junctions, said web being formed in one piece with said portion, said leads including paired thermoelement conductors with each pair of conductors joined in a respective thermocouple at a respective junction, said passages being formed in said body in pairs spaced on either side of said web and traversed by the respective pairs of conductors, said portion thereby having four of said passages, said web being disposed between said thermocouples.

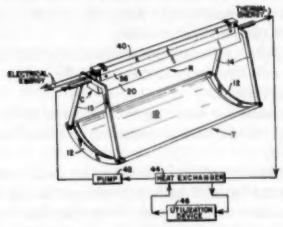
4,278,829
SOLAR ENERGY CONVERSION APPARATUS

Roger A. Powell, 1589 Vernon Rd., Norristown, Pa. 19401

Filed Mar. 12, 1979, Ser. No. 19,784

Int. Cl.³ H01L *31/04*

U.S. Cl. 136—248 **9 Claims**



1. A solar energy conversion apparatus comprising:

(a) a photoelectric transducer for converting incident solar energy within a particular spectral region to electrical energy;

(b) a selectively absorbing liquid adapted to transmit solar energy within said spectral region and to absorb solar energy outside said spectral region, whereby the absorbed solar energy is converted to thermal energy in said liquid;

(c) means for supporting said liquid on an optical path between the sun and said transducer, said supporting means comprising a container having front and rear walls which are substantially transparent to solar energy within said spectral region, said front wall being additionally transparent to solar energy of wavelengths absorbed by said liquid, said container further comprising reflective side walls between said front and rear walls, said side walls acting to redirect incident solar energy toward said rear wall;

(d) means for supporting said transducer in a position spaced from said rear wall to thermally isolate said transducer from said liquid, whereby said liquid can be heated to a temperature which exceeds the optimal operating temperature of said transducer;

(e) supplemental absorbing means positioned within said container to absorb solar energy within a particular spectral bandpass to which said liquid is transparent; and

(f) means for extracting thermal energy from said liquid for utilization.

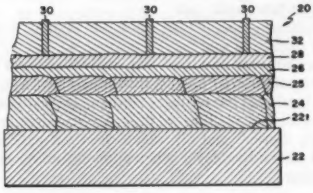
4,278,830
SCHOTTKY BARRIER SOLAR CELL

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Richard J. Stirn, La Canada, and Yea-Chuan M. Yeh, Santa Monica, both of Calif.

Continuation-in-part of Ser. No. 837,513, Sep. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 683,073, May 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 597,430, Jul. 21, 1975, abandoned. This application Nov. 13, 1979, Ser. No. 93,714

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—255 **7 Claims**



1. In a Schottky barrier solar cell for converting incident light energy to electrical energy, said cell including means for supporting an active layer of a semiconductor material which includes arsenic as one of its constituents and a layer of semi-transparent metal, which together with said semiconductor layer forms a Schottky barrier, and through which light reaches said semiconductor active layer, the improvement comprising:

an interfacial oxide layer between said active semiconductor layer and said metal layer, said oxide layer being characterized by including arsenic in an oxidation state of not less than +3.

4,278,831
PROCESS FOR FABRICATING SOLAR CELLS AND THE PRODUCT PRODUCED THEREBY

Dietrich E. Riemer, Auburn, and Rudolph E. Corwin, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 33,887, Apr. 27, 1979, abandoned. This application Feb. 20, 1980, Ser. No. 122,828

Int. Cl.³ H01L *31/04, 31/18*

U.S. Cl. 136—256 **13 Claims**

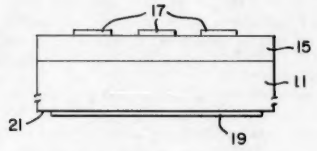
10. The product produced by the process comprising the steps of:

a. forming a substantially transparent, electrically conducting, anti-reflective, barrier coating on one surface of a silicon base layer, in which a PN junction has been or is to be formed near the one surface thereof;

b. forming an electrically conducting thick film contact on the one surface of said barrier coating; and

c. firing said thick film contact at conventional thick film

process temperatures without the material comprising said thick film contact penetrating through said barrier coating to said silicon base layer, wherein the material comprising said barrier coating is such that it (1) acts as a barrier to the diffusion of the material comprising the thick film contact during the step of firing the contact, thereby preventing diffusion of said thick film material into the silicon base layer, and further such that it (2) does not itself diffuse into the silicon base layer when the barrier coating is formed thereon, so that a path for electrical current is established between said thick film contact and the silicon base layer through said barrier coating without a diffusion of either said coating material or said contact material into said silicon base layer to such an extent to detrimentally affect the operation of the solar cell.



11. A solar cell, comprising:

a silicon base layer having a PN junction formed therein;

a substantially transparent, electrically conducting, anti-reflective, barrier coating formed on one surface of said silicon base layer; and

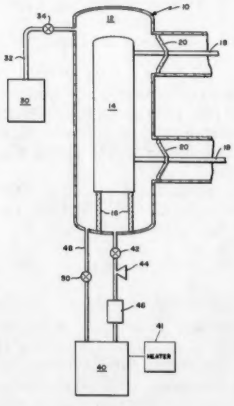
an electrically conducting, thick film contact formed on the one surface of said barrier coating, so that a current path exists between said thick film contact and said silicon base layer, said barrier coating comprising a material (1) which is a barrier to the diffusion of the material comprising said thick film contact at the high temperatures necessary for firing thereof, and (2) which does not itself diffuse into said silicon base layer when applied thereto as the barrier coating.

4,278,832

METHOD AND MEANS FOR CLEANING THE GAS INSULATED ENVIRONMENT OF AN ELECTRICAL APPARATUS

Narain G. Hingorani, Los Altos Hills, Calif., assignor to Electric Power Research Institute, Palo Alto, Calif.

Filed Oct. 29, 1979, Ser. No. 89,268
Int. Cl.³ H01B *17/36;* B03C *3/70*
U.S. Cl. 174—14 R **11 Claims**



1. A method of cleaning the environment of a gas insulated electrical apparatus to remove contaminants in said environment comprising the steps of:

introducing into said environment a cleansing fluid in vapor form,

condensing said fluid on internal surfaces of said apparatus within said environment and thereby capturing contaminants, and

removing said condensed fluid and contaminants from said environment.

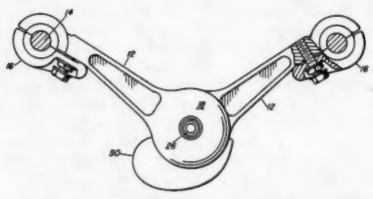
8. In sealed gas insulated electrical apparatus, means for cleaning the enclosed gas insulating environment of said apparatus comprising means for introducing into said environment a cleansing fluid in vapor form, and means for removing said cleansing fluid from said environment after said cleansing fluid condenses in said environment.

4,278,833

DAMPING SPACER WITH HUB INTERLOCK

Ronald G. Hawkins, Massena, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 39,879, May 17, 1979, Pat. No. 4,223,176. This application Aug. 7, 1980, Ser. No. 176,084
Int. Cl.³ H02G *7/14, 7/12*
U.S. Cl. 174—42 **1 Claim**



1. A frameless damping spacer for two parallel overhead conductors comprising:

two rigid elongated spacer arms,

an integral hub structure associated with each of the spacer arms,

a disc-like structure located between the hub structures, the disc-like structure being made of a relatively heavy material to provide an inertial weight for the damping spacer, the mass of inertial weight being off-center in the direction of one of the two spacer arms,

rigid pin means extending perpendicularly through the disc-like and hub structures to mechanically connect the structures together,

clamping means for securing the spacer arms to respective overhead conductors at locations remote from the hub structures,

opposed, radially offset, semi-circular wall portions provided on the faces of the hub structures facing the disc-like structure, and on both faces of the disc-like structure, the wall portions forming opposed, radially offset, semi-circular recesses in the disc-like and hub structures,

the hub and disc-like structures being disposed together such that the wall portions of the hub structures extend into the recesses of the disc-like structure, and vice versa,

the wall portions of the disc-like and hub structures being located at the same radial distance from the centers of the disc-like and hub structures,

the dimensions of the wall portions and the recesses being such that relative movement of the spacer arms and the disc-like structure is permitted,

a second recess provided in both faces of the disc-like structure and in the faces of the hub structures having the wall and recess portions, for receiving elastomer bushings, and

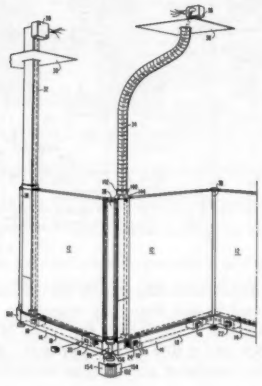
elastomer bushings located respectively between the faces of the disc-like and hub structures and in the second recesses.

4,278,834

VERSATILE, ELECTRIFIED SPACE DIVIDING WALL PANEL SYSTEM

Bruce K. Boundy, Holland, Mich., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 6, 1978, Ser. No. 967,181
Int. Cl.[3] H02G 3/00
U.S. Cl. 174—48 4 Claims



1. An electrified space dividing wall panel system comprising:

a plurality of space dividing wall panels having an elongated open ended covered channel extending along and secured to the bottom edge thereof, said elongated open-ended covered channel extending along and secured to the bottom edge of each panel including hinged side walls providing access to the interior of said channel, said side walls each including at least two spaced apertures therethrough;

cylindrical support posts having annular slots therein for supporting said space dividing wall panels;

a pair of spaced terminal blocks each disposed within said elongated covered channel adjacent an opposite end thereof in each of said space dividing wall panels, each of said terminal blocks including two sets of four vertically aligned male electrical connecting terminals extending outwardly longitudinally of said channel adjacent said open ends, one of said male electrical connecting terminals in each of said sets of four vertically aligned male electrical connecting terminals, including a raised portion defining a different shape than the others in said set of four vertically aligned male electrical connecting terminals;

means electrically connecting each terminal block to the other terminal block in each of said plurality of panels; and

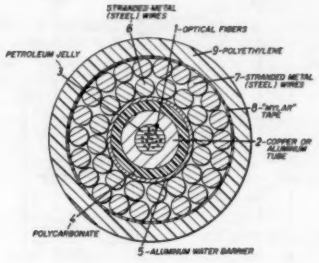
a plurality of flexible cables having four female electrical receptacles at each end thereof, said female electrical receptacles adapted to electrically connect to one of said sets of four vertically aligned male terminals on a terminal block on one of said panels while the four female electrical receptacles at the other end of said flexible cable are connected to one of said sets of four vertically aligned male terminals on another of said panels while said flexible cable spans said cylindrical post, one of said female electrical receptacles in each of said sets of four female electrical receptacles is of a shape compatible with said one male electrical connecting terminal of a different shape and different from the remaining three female electrical receptacles in said set of four female electrical receptacles.

4,278,835

SUBMARINE COMMUNICATION CABLE INCLUDING OPTICAL FIBRES WITHIN AN ELECTRICALLY CONDUCTIVE TUBE

Lynden A. Jackson, Ipswich, England, assignor to The Post Office, London, England

Filed Dec. 14, 1978, Ser. No. 969,574
Claims priority, application United Kingdom, Dec. 16, 1977, 52509/77
Int. Cl.[3] G02B 5/14
U.S. Cl. 174—70 R 3 Claims



1. A submarine communication cable comprising a tubular sheath of electrically conductive metal, jelly material within said sheath and a plurality of longitudinally extending optical fibers within the jelly-filled sheath each fiber being unconstrained and radially spaced from the sheath wall.

4,278,836

REPAIR COUPLING FOR FLEXIBLE ELECTRICAL CONDUIT

Loran S. Bingham, 3571 Oceanview Ave., Mar Vista, Calif. 90066

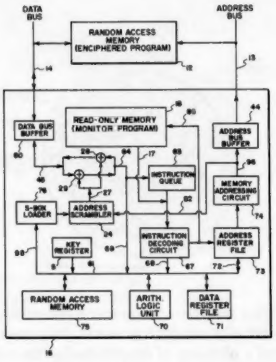
Filed Sep. 15, 1978, Ser. No. 942,606
Int. Cl.[3] H02G 1/16
U.S. Cl. 174—84 S 10 Claims

1. A repair coupling for rejoining separated ends of flexible electrical conduit sections comprised of helically wrapped loosely interlocked strip and with wiring extending continuously therethrough and therebetween, and including; an elongated maleable body of shell form having an initial semi circular arucate cross sectional configuration with inner and outer perimeter walls, said perimeter walls terminating at opposite normal ends and having coextensive juxtaposed edges initially spaced one from the other to establish a longitudinally disposed slot-shaped opening for the lateral reception of said wiring, at least a portion of said initially spaced juxtaposed edges of the maleable body being reformable into tubular configuration with overlapped engagement and with opposed stop shoulders thereof engaged to limit constriction of the diameter of said outer perimeter wall thereof for insertion into opposed ends of the separated conduit sections.

4,278,837
CRYPTO MICROPROCESSOR FOR EXECUTING ENCIPHERED PROGRAMS

Robert M. Best, 16016 9th Ave. NE., Seattle, Wash. 98155

Continuation-in-part of Ser. No. 846,638, Oct. 31, 1977, Pat. No. 4,168,396, and Ser. No. 927,580, Jul. 24, 1978, abandoned, which is a continuation of Ser. No. 750,009, Dec. 13, 1976, abandoned.
This application Jun. 4, 1979, Ser. No. 44,952
Int. Cl.³ H04L *9/00*
U.S. Cl. 178—22.09 **47 Claims**



1. A cryptographic microprocessor apparatus constructed as an integrated circuit chip for executing a computer program of information stored in enciphered form in a storage means as a plurality of portions of enciphered program instructions, the apparatus comprising:

means included in said chip for storing a cipher key;

deciphering means included in said chip for cryptographically transforming a portion of said enciphered program information under control of said cipher key to produce a portion of deciphered information containing a deciphered instruction in said program;

processing means included in said chip for fetching a deciphered instruction from a portion of deciphered information from said deciphering means, and for executing the deciphered instruction, and for addressing in said storage means a subsequent portion of said enciphered program information for transforming by said deciphering means.

4,278,838
METHOD OF AND DEVICE FOR SYNTHESIS OF SPEECH FROM PRINTED TEXT

Lyubomir Y. Antonov, Sofia, Bulgaria, assignor to Edinen Centar Po Physika, Sofia, Bulgaria

Continuation-in-part of Ser. No. 32,507, Apr. 23, 1979, abandoned, which is a continuation of Ser. No. 829,944, Sep. 1, 1977, abandoned. This application Aug. 2, 1979, Ser. No. 63,169
Claims priority, application Bulgaria, Sep. 8, 1976, 34160
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SM **4 Claims**

1. A method for synthesizing speech, comprising the steps of:

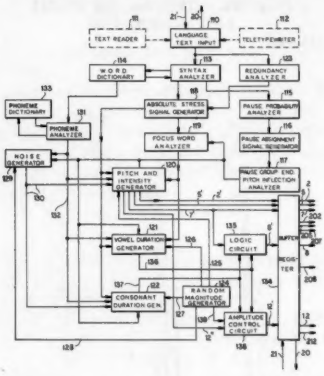
analyzing a printed text grammatically and phonetically for sequences of phonemes, for the placement of accents, for the placement and duration of pauses and intonations to form frequency magnitude and amplitude characteristics of a sentence to be synthesized;

reading out from a read-only memory, according to said frequency magnitude characteristics, binary signals coding at least in part successive magnitudes of voice-frequency functions;

converting said binary signals at the output of said read-only memory into an analog signal;

modulating said analog signal according to said amplitude characteristics;

introducing quasirandom changes in said frequency magnitude and amplitude characteristics to facilitate the production of natural-sounding speech, the quasirandom changes introduced in said frequency magnitude and amplitude characteristics being within the limits of ±3% for the frequency and ±30% for the amplitude; and

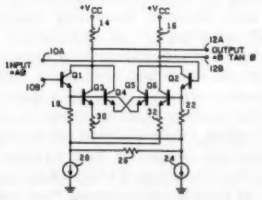


feeding the modulated analog signal to the loudspeaker.

4,278,839
TANGENT FUNCTION GENERATOR FOR AM STEREO

Charles J. Marik, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1979, Ser. No. 63,273
Int. Cl.³ H04H *5/00;* **G06G** *7/22*
U.S. Cl. 179—1 GS **7 Claims**



1. A function generator comprising in combination:

means for providing a two-quadrant input signal;

differential amplifier means coupled to the input means for linearly amplifying the input signal;

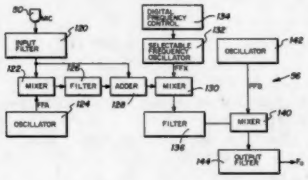
a plurality of additional amplifier means coupled to the differential amplifier means, each additional amplifier means comprising a pair of first and second transistors biased to a threshold level different from the threshold level of each other additional amplifier means and only one transistor of each pair conducting during each polarity of the input signal; and

means for combining the outputs of all amplifier means.

4,278,840
DYNAMIC FREQUENCY AND TIME VOICE ENCRYPTION SYSTEM AND METHOD

Barrie O. Morgan, and Mitchell M. Wilkinson, both of Dallas, Tex., assignors to Datotek, Inc., Dallas, Tex.

Filed Mar. 23, 1979, Ser. No. 23,170
Int. Cl.³ H04K *1/04*
U.S. Cl. 179—1.5 S **29 Claims**



1. A voice scrambler system for encryption of a voice signal comprising:

a first generator for generating a fixed frequency signal;

a second generator for generating a plurality of frequency signals;

control means for dynamically controlling said second generator for randomly generating said plurality of frequency signals;

first mixer means for heterodyning the voice signal with said fixed frequency signal generated by said first generator;

first filter means for filtering the output of said first mixer means;

adder means for adding the voice signal and the output of said first filter means;

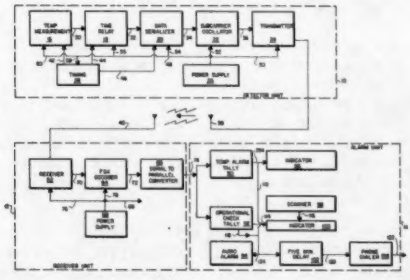
second mixer means for heterodyning the output of said adder means with one of said plurality of frequency signals generated by said second generator; and

second filter means for filtering the output of said second mixer means to generate an encrypted voice signal of a first level of voice encryption.

4,278,841
MULTIPLE STATION TEMPERATURE MONITOR SYSTEM

Jack Regennitter, 1734 E. 3015 South, Salt Lake City, Utah 84106, and Ronald C. Ward, Salt Lake City, Utah, assignors to Jack Regennitter, Salt Lake City, Utah

Filed Oct. 22, 1979, Ser. No. 87,254
Int. Cl.³ H04M *11/04*
U.S. Cl. 179—5 R **7 Claims**



1. A temperature monitoring system comprising: a plurality of detector units, each of which includes:

temperature measuring means positioned to sense the air temperature of a refrigerated area to generate a temperature alarm signal reflective of a preselected alarm temperature condition,

time delay means conductively connected to said temperature measuring means to receive and integrate temperature alarm signals and to transmit a temperature alarm signal after a preselected time delay,

a data serializer conductively connected to receive the temperature alarm signal from said time delay means, said data serializer having identification code means to generate a preselected identification code unique to a detector unit, and wherein said data serializer converts said identification code and said temperature alarm signal into a serialized data train,

a subcarrier oscillator conductively connected to said data serializer to receive said data train to generate a radio frequency subcarrier signal modulated with said data train signal,

a transmitter with antenna means conductively connected to receive said modulated radio frequency subcarrier signal from said subcarrier oscillator to transmit a radio frequency carrier modulated with said modulated radio frequency subcarrier,

timing means conductively connected to said temperature measuring means, time delay means and data serializer to supply timing signals thereto to cause intermittant operation thereof in accordance with a preselected schedule, and

a first power supply conductively connected to supply power to said temperature measuring means, time delay means, data serializer, subcarrier oscillator transmitter and timing means;

a receiver unit positioned remote from said detector unit, said receiver unit including:

receiver means with antenna means to receive said radio frequency carrier from said transmitter to extract therefrom said modulated radio frequency subcarrier,

frequency shift key decoder means conductively connected to said receiver to receive said modulated radio frequency subcarrier therefrom to extract said data train from said subcarrier,

serial to parallel converter means conductively connected to said decoder means to receive said data train therefrom and to convert said data train into a plurality of parallel in time data signals reflective of the temperature and the identity of the detector unit related thereto, and

a second power supply conductively connected to said receiver, frequency shift key decoder and said serial to parallel converter to supply power thereto; and

an alarm unit conductively connected to said serial to parallel converter to receive said data signals therefrom and to said second power supply to receive power therefrom, said unit including:

a temperature alarm tally circuit to receive said data signals and generate an alarm signal indicative of the existence of an alarm condition and the identity of the detector unit from which the alarm condition has been transmitted,

indicator means conductively connected to receive said alarm signal to indicate the existence thereof and identify of the detector unit related thereto, and

external alarm means to receive said alarm signal and indicate the existence thereof external from the alarm unit.

4,278,842
CIRCUIT FOR ELIMINATING SPURIOUS PULSES IN A DIAL PULSE STREAM

George H. Simmons, East Lansing, Mich., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

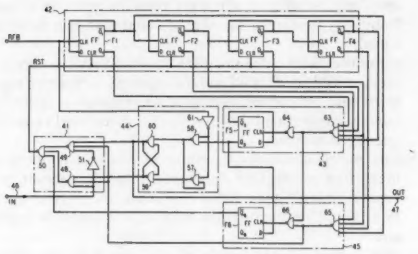
Filed Jun. 6, 1979, Ser. No. 45,970
Int. Cl.³ H04Q *1/36*
U.S. Cl. 179—16 EA **4 Claims**

1. In a communication system wherein two level dial pulse signals contain both genuine and spurious transient pulses, a spurious pulse elimination circuit which receives said dial pulse signals as an input signal and generates genuine pulses as an output signal, said circuit characterized by

means (41) for comparing the input (46) and output (47)

signal levels of said circuit and generating therefrom a control signal when the level of said input signal differs from the level of said output signal, said control signal being continuously present until the levels of said input and output signals are the same,

counting means (42) responsive to said control signal for counting for a preselected time interval and being reset to zero by a predetermined state of said control signal, said counting means also being reset to zero once the count has continued for the preselected time interval,



means (43, 44) coupled to said counting means for preventing said output signal level from matching a change in input signal level unless the duration of said change in input signal level exceeds a first particular count within said preselected time interval, and

means (45) coupled to said counting means for holding said output signal level constant when said change in input signal level is from a first to a second predetermined signal level, the holding means being activated by said first particular count and the holding means being deactivated once a second particular count is counted by said counting means.

4,278,843

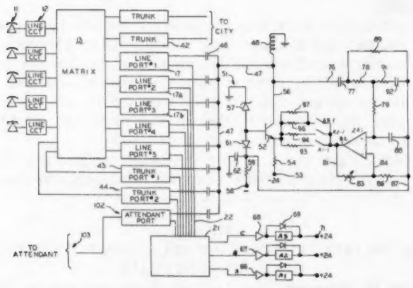
TWO-WAY AMPLIFIER ARRANGEMENT

Alfred M. Hestad, Chicago, Ill., assignor to Anaconda-Ericsson Inc., Denver, Colo.

Continuation of Ser. No. 456,971, Apr. 1, 1974, abandoned. This application Nov. 25, 1975, Ser. No. 635,239

Int. Cl.³ H04M *3/56*

U.S. Cl. 179—18 BC **9 Claims**



1. In a PABX conference call system, means for interconnecting two or more telephone stations in a conference type call, said interconnecting means including a signal transmission circuit for transmitting voice frequency signals originating from each telephone station connected in the call to each remaining telephone station that is connected in the call, the improvement comprising means (a) for amplifying voice frequency signals transmitted by said transmission circuit by a first predetermined amount only in response to the interconnection of a first pre-selected number of the telephone stations by said interconnecting means and (b) for amplifying the voice frequency signals transmitted by said transmission circuit by a second predetermined amount only in response to the interconnection of a second pre-selected number of the telephone stations by said interconnecting means, said first pre-selected number being in excess of two and less than said second pre-selected number, and said second predetermined amount being more than said first predetermined amount.

4,278,844

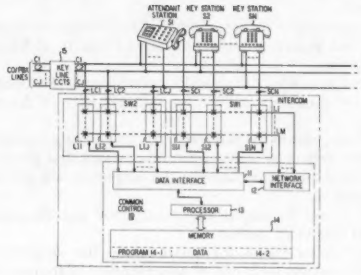
COMMUNICATION SYSTEM SELECTIVE CALL SCREENING ARRANGEMENT

David F. Jones, Middletown Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 26, 1979, Ser. No. 23,741

Int. Cl.³ H04M *3/48, 3/54*

U.S. Cl. 179—18 B **42 Claims**



10. A selective call screening arrangement for use in a telephone system having a plurality of stations each having a capability of communication with other stations through a switching network internal to said system, said switching network having a communication facility extending to each said station and each of said stations having a signaling means operable to establish a call feature and a dialing means to establish a communication connection to said station,

CHARACTERIZED IN THAT said call screening arrangement includes

means for activating said call screening arrangement from signals sent from said signaling means of a first station, said call screening arrangement designed to forward an incoming call addressed to said first station to a second station while blocking an incoming call addressed to said second station;

means for accepting an address of said second station from a dialing code subsequently entered using said dialing means at said first station; and

means controlled by said activating means and said accepting means for enabling said activated call screening arrangement to block an incoming call addressed to said second station while allowing an incoming call addressed to said first station to be forwarded to said second station.

4,278,845

TELEPHONE INDEX FOR AUTOMATIC DIALING

Suchi Chiou, 5th fl., No. 14, Lane 180, Ho-Chiang St., Taipei, Taiwan

Filed Aug. 20, 1979, Ser. No. 67,758

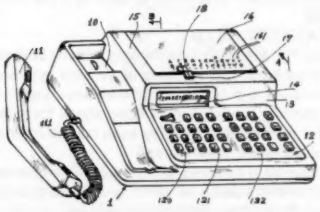
Int. Cl.³ H04M *1/274*

U.S. Cl. 179—90 B **3 Claims**

1. In a telephone apparatus with memory-stored dialing data for automatic dialing comprising a housing having an entry keyboard switch means thereon for entering numbers to be stored and display means for displaying the number entered by

said entry keyboard; multiple card index means for a visual listing of names and telephone numbers, each card including individual lines for individual numbers arranged in the same position on the cards, wherein said card and lines are divided into a plurality of left-hand lines and a plurality of right-hand lines being substantially equal in number, and further including a card-supporting place, a cover pivotally mounted over said cards, and a card-selecting hook freely engaging said cover for positioning an individual card for visual display of the card's content; card switch means including an individual contact associated with each card index; selector switch means including a left-hand and a right-hand series of push buttons with one button in said left-hand series for and adjacent to each of said left-hand lines and one button in said right-hand series for and adjacent to each of said right-hand lines so that said selector switch means is activated by a push button to close a circuit for a particular line positioned on an individual card to thereby complete a first circuit associated with the card contained data and close a second circuit associated with a particular line on a card to retrieve and automatically dial a telephone number stored at a location in the memory associated with said particular line; and a visual display panel means on said housing adjacent said cover for displaying the number dialed by actuating said card switch and selector switch; the improvement which comprises:

(a) said card-selecting hook comprises a surface plate, a vertical plate extending under said surface plate, a middle hook plate connecting said vertical plate and two legs extending downwards from said hook plate, said surface plate of said card-selecting hook including a center line



which coincides with the classification of telephone numbers on said cover;

(b) further wherein said two legs which extend from said card-selecting hook freely engage a sliding button which is movingly engaged within a horizontal plate extending from said housing such that both the card-selecting hook and the sliding button may be moved simultaneously;

(c) said sliding button comprises a surface plate, a vertical plate with a hook connecting said surface plate and a horizontal plate connecting said vertical plate, said horizontal plate having a tongue extension at one end and another end which extends in two arms each terminating with a shaft bracket for pivotally inserting a horizontal shaft therein, a sliding plate which extends downwards in two arms each terminating with a shaft bracket for pivotally inserting said horizontal shaft, and a spring which is jacketed into said shaft having one end resting against said horizontal plate of said sliding button and the other end fixed on said sliding plate under said card-supporting plate such that said spring, acting by its one end to force said hook of said button to engage with the edge of said cover and acting by its other end to force said sliding plate to back against the botton of said card-supporting plate, causes said cover plate to open as said sliding button is depressed; and

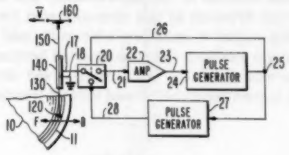
(d) a printed circuit board comprising individual electrical contacts corresponding to each card in said card index is positioned under said tongue extension of said sliding button such that momentary electrical contact is made and the circuit is momentarily energized when said sliding button is depressed and at the same time said cover plate is opened.

4,278,846

VIDEO DISC LOCKED GROOVE CLEARANCE SYSTEM

Kazuo Fukazawa, Tokyo, and Akira Yamada, Chofu, both of Japan, assignors to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1979, Ser. No. 88,659
Int. Cl.³ H04N *5/76*; G11B *3/06, 3/10*
U.S. Cl. 369—128 **6 Claims**



1. In combination:

a support housing with a compliant member mounted at one end thereof;

a stylus arm with a pickup stylus mounted at a first end thereof and having a second end;

a longitudinal transducer having a first end mounted to the second end of the stylus arm, having a second end and a signal electrode, said transducer generating a potential proportional to a prescribed relative motion between its first and second ends and imparting relative motion in a prescribed direction between its ends proportional to a signal applied to said signal electrode;

means mounting the second end of the transducer to the compliant member arranged so that the transducer will be responsive to stylus motion normal to the longitudinal axis of the stylus arm;

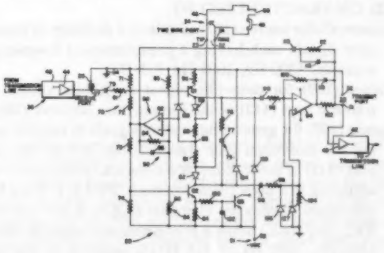
circuit means having an input terminal selectively connected to the transducer electrode signal, said circuit means generating, at an output terminal thereof, output signals responsive to signals above a prescribed frequency which are generated in said longitudinal transducer, said circuit means output terminal being connected to the transducer signal electrode for energizing said transducer.

4,278,847

TRANSFORMERLESS HYBRID CIRCUITS

Donald W. Wortman, Central Islip, N.Y., assignor to TII Corporation, Lindenhurst, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,407
Int. Cl.³ H04B *1/58*
U.S. Cl. 179—170 NC **13 Claims**



3. In an electronic hybrid for coupling a two-wire line to a four-wire line and having a two-wire port adapted to be connected to the two-wire line for receiving incoming information signals from the two-wire line and for applying outgoing infor-

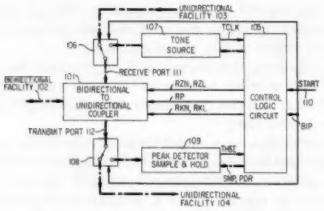
mation signals to said two-wire line, separate receive and transmit ports adapted to be connected to said four-wire line, means for coupling the incoming information signals from said two-wire port to said transmit port, first and second transistors each having first and second signal terminals, means for coupling a single-ended information signal received at said receive port to the first terminal of said first transistor, circuit means connected to and cooperating with said transistors for converting said single-ended information signal into a balanced differential signal having one signal component on the second terminal of said first transistor and the other signal component on the second terminal of second transistor, and means coupling said second terminals to said two-wire port for applying said differential signal to said two-wire port, said circuit means comprising a feedback circuit connected between the first and second terminals of said first transistor and also between the first and second terminals of said second transistor.

4,278,848

AUTOMATICALLY ADJUSTABLE BIDIRECTIONAL-TO-UNIDIRECTIONAL TRANSMISSION NETWORK

Joseph F. Rizzo, Lodi, and John A. Rudisill, Jr., Flanders, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 6, 1979, Ser. No. 64,041
Int. Cl.³ H04B *1/58*
U.S. Cl. 179—170 D **10 Claims**



1. A transmission network (FIG. 1, 101) having receive (111) and transmit (112) ports and at least a third port adapted to couple a bidirectional (2-wire) transmission facility (102) to receive (103) and transmit (104) unidirectional facilities (4-wire) including a controllably adjustable impedance network (FIG. 2, 202) in circuit relationship with at least said receive (111) and transmit (112) ports, responsive to control signals, and having a plurality of adjustable impedance elements (FIG. 3, RKN, RZN, RP or FIG. 4, RKL, RZL) for obtaining an optimum match to the impedance of the bidirectional facility (102), CHARACTERIZED BY,

a controllable source (107) of at least a plurality of individual tone signals each having a predetermined frequency (for example, 1300 Hz, 2600 Hz, 325 Hz),

means (109) for detecting signal amplitude values at the transmit port (112) of the transmission network (101), and

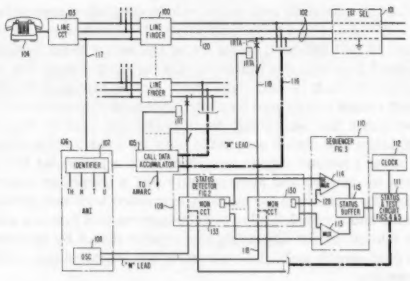
means (105) for generating control signals to control supplying the individual tone signals (from 107) to the receive port (111) of the transmission network (101) and to control adjusting in a prescribed sequence (FIGS. 8–10 or 14) the individual impedance elements (RKN, RZN and RP, or RKL and RZL) while a predetermined tone (for example, 1300 Hz, 2600 Hz or 325 Hz) is supplied to the receive port (111) for obtaining an amplitude null (detected via 109) at the transmit port (112) for each impedance element (RKN, RZN and RP or RKL and RZL) in said sequence, so that transhybrid loss between the receive port (111) and transmit port (112) is maximized.

4,278,849

TEST ARRANGEMENT FOR AUTOMATIC NUMBER IDENTIFICATION SYSTEMS

Erling T. Sund, Westerville, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 19, 1979, Ser. No. 95,798
Int. Cl.³ H04M *15/06*; H04Q *3/72*
U.S. Cl. 179—175.2 C **9 Claims**



2. For use in a telephone system comprising groups of line switches, automatic number identification means including an individual conductor associated with each switch group, and means for momentarily connecting each conductor with a switch in its corresponding switch group to transmit an identifying signal over said conductor to identify a line connected to said switch

CHARACTERIZED BY

apparatus for detecting trouble-held ones of said connecting means comprising a plurality of monitor means each coupled to a corresponding one of said identifying conductors and responsive to said identifying signal thereon,

means for periodically scanning each said monitor means for a predetermined interval, and

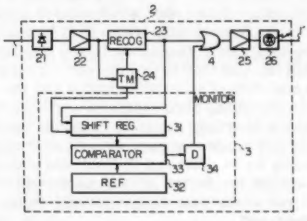
means controlled by said scanning means for interrupting the signal on said conductor when said signal is continuously present for said predetermined interval.

4,278,850

MONITORING SYSTEM FOR OPTICAL TRANSMISSION LINE REPEATERS

Masanori Sato, Machida; Yasuhiko Niiro, Yokohama, and Hiroharu Wakabayashi, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1979, Ser. No. 28,312
Claims priority, application Japan, Apr. 11, 1978, 53-41782; May 8, 1978, 53-54288
Int. Cl.³ H04B *3/46*
U.S. Cl. 179—175.31 R **8 Claims**



1. In an optical digital transmission system including a transmitting station coupled by way of a transmission line to a receiving station and at least one intermediate repeater station, the combination therewith of:

(a) optical pulse generating means at said transmitting station for establishing a test signal on a time divisional basis with the data to be transmitted, said test signal comprising an indentification code for identifying a particular repeater station and an acknowledgement block having an empty bit position,

(b) decoding means at said repeater station for decoding said identification code, said decoding means outputting an acknowledgement signal upon recognition of said identification code,

(c) delaying means at said repeater station coupled to the output of said decoding means for delaying said acknowledgement signal to achieve time coincidence with said empty bit position in said acknowledgement block, and

(d) gating means at said repeater station coupled to the outputs of said delaying means and the transmission line for combining said test and data signals with said acknowledgement signal on a time divisional basis for transmission to said receiving station.

4,278,851

PIEZOELECTRIC BUZZER

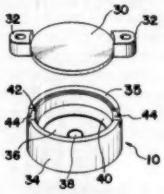
Tadashi Takaya, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Aug. 30, 1979, Ser. No. 71,238

Claims priority, application Japan, Sep. 7, 1978, 53-123323[U]

Int. Cl.³ H04R *1/28;* G08B *3/00*

U.S. Cl. 179—179 **8 Claims**



2. A piezoelectric buzzer, comprising:

transducer means for producing a sound when energized;

casing means accommodating said transducer means, said casing means comprising a hollow body having one end closed by a perforated end wall and having one end open;

lid member means for closing said open end, and

means for loosely connecting said lid member means to said casing means to permit said casing means to more freely in all directions with respect to said lid member means, said connecting means comprising an annular groove defined on the inner peripheral surface of said hollow body and surrounding said open end thereof, said annular groove being adapted to loosely receive said lid member means.

4,278,852

EARPHONE CONSTRUCTION

Rudolf Görike, Vienna, Austria, assignor to AKG Akustische u. Kino-Gertäte Gesellschaft m.b.H., Austria.

Filed Aug. 28, 1978, Ser. No. 937,439

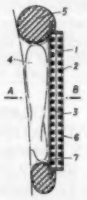
Claims priority, application Austria, Aug. 31, 1977, 6285/77; Nov. 9, 1977, 8010/77; Mar. 2, 1978, 1493/78

Int. Cl.³ H04R *1/10, 7/04*

U.S. Cl. 179—182 R **11 Claims**

1. An earphone for a person's ear, comprising, an ear pad adapted to surround the ear, at least one electroacoustic transducer having a housing supported on said ear pad, and a surface-driven diaphragm with a periphery directly supported on said housing and having a surface area larger than that of the ear, said at least one diaphragm comprising two surface-driven diaphragm parts disposed at substantially right angles to each other, said electroacoustic transducer including a housing portion of wedge-shaped configuration joined directly to said ear pad having walls at right angles to each other, said ear pad being of a similar configuration with said diaphragm parts extending across substantially said entire walls.

9. An earphone construction for being worn over an auricle of a person's ear comprising, an ear pad adapted to surround the auricle of the person's ear and be free from contact therewith, at least one electroacoustic transducer supported on said ear pad at a location adapted to be free from contact with the auricle and defining therewith a coupling space, the electroacoustic transducer being substantially acoustically transparent, and including a surface-driven diaphragm having mass of



about 0.04 grams, with the mechanical impedance thereof, in the audible frequency range, being low with respect to the acoustic radiaton resistance thereof, the diaphragm having a periphery supported on said ear pad so as to be in contact-free and close proximity to the auricle and defining a boundry of the coupling space whereby said diaphragm reflects substantially no sound in the coupling space, a surface of said diaphragm facing away from the coupling space being in direct contact with air outside the coupling space and the surface area of said diaphragm exceeding that of the auricle and extending beyond the auricle on all sides thereof.

4,278,853

BATTERY CASE INCLUDING A MAIN SWITCH DEVICE

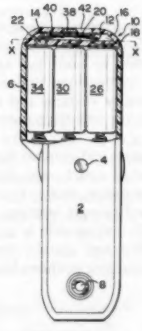
Hiroshi Wakabayashi, Yokohama, and Takeshi Okuyama, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 26, 1979, Ser. No. 14,954

Claims priority, application Japan, Mar. 1, 1978, 53-25847[U]

Int. Cl.³ H01H *15/00*

U.S. Cl. 200—16 D **6 Claims**



1. A battery case comprising a battery chamber body having a chamber therein for receiving battery means and formed with an opening for loading the battery means into the chamber, a lid member engageable with the battery chamber body for closing said opening, the lid member having an inner wall located adjacent to the chamber and an outer wall located adjacent to the inner wall so as to define an enclosed space between said inner wall and said outer wall and having an aperture in said outer wall, at least a pair of electrode contacts extending between first and second surfaces of said inner wall, each of said electrode contacts having a first end located on

said first surface of the inner wall and exposed to said enclosed space and a second end located on said second surface of the inner wall and exposed to said chamber, said second end being positioned to contact an electrode of the battery means received within the chamber, and switch means located within said enclosed space, the switch means having a switch member formed of conductive resilient material and being adapted for displacement between a first position at which the switch member connects said first ends to connect said electrode contacts together and a second position at which the switch member is incapable of connecting said first ends, and an operating member being operable through the aperture in the outer wall and being slidable with respect to the aperture, the operating member being effective to displace the switch member between said first and second positions by said sliding.

4,278,854

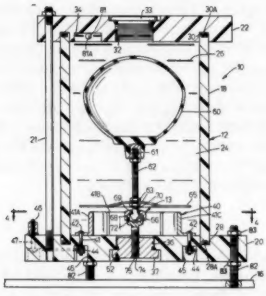
TILT INDICATING DEVICE

Hans H. Krause, 10212 N. Cedarburg Rd., Mequon, Wis. 53092

Filed Apr. 20, 1979, Ser. No. 31,755

Int. Cl.³ H01H *35/02*

U.S. Cl. 200—52 A **23 Claims**



1. A tilt indicating device for a tiltable machine or component, comprising:

a housing subject to a tilting motion to be detected and having therein a chamber containing liquid;

a float in said chamber buoyantly supported by said liquid therein;

a support member having a pivotal connection with said housing at the lower end of said member and also having a fixed connection to said float at the upper end of said member, said connections defining an axis tending to remain substantially vertical and extending through said pivotal connection and the center of buoyancy of said float;

first and second electrical contact members in said chamber and axially spaced apart, said first contact member attached to said support member and said second contact member attached to said housing, said contact members being electrically engageable in any direction from vertical, and said first and second contact members having electrically conducting portions laterally spaced from said axis.

4,278,855

SNAP ACTION SWITCH

Guglielmo Rossi, Linkenheim, Fed. Rep. of Germany, assignor to Ranco Incorporated, Columbus, Ohio

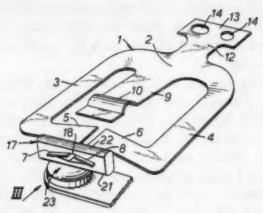
Filed Mar. 12, 1980, Ser. No. 129,715

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1979, 8776/79

Int. Cl.³ H01N *13/38*

U.S. Cl. 200—67 D **12 Claims**

1. A snap action swith including a resilient blade having two cantilever arms with respective end portions and a contact element interconnecting the end portions of said arms and stressing the blade for snap movement of the contact element, wherein the contact element has at least an aperture in which both said end portions are engaged, the contact element being retained on said end portions by virtue of the stressing of the



arms of the blade, said contact element aperture tapering in width from its center towards its opposite ends, allowing angular movement of each blade end portion about the edge thereof which engages the respective end of the aperture.

4,278,856

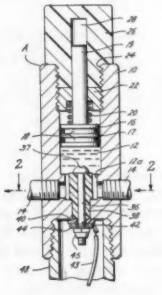
FLUID PRESSURE INDICATOR SWITCH APPARATUS

Charles A. Owens, 6616 Dixie Dr., Houston, Tex. 77087

Filed Jun. 29, 1979, Ser. No. 53,266

Int. Cl.³ H01H *35/38*

U.S. Cl. 200—82 R **5 Claims**



1. A switch designed for pressurized fluid supply lines which visually indicates the position of the switch, comprising:

a housing with a central cavity;

an electrically conductive piston disposed within the central cavity of the housing having an elongated stem;

a retaining insert mounted at one end of the housing to close said one end, said insert having a guide bore receiving the elongated stem of the piston;

a cap mounted at one end of the housing adjacent to the retaining insert, said cap containing a channel receiving the elongated stem of the piston;

an electrical contact in the opposite end of the housing from the cap;

resilient means for moving the piston towards the electrical contact when the pressure of the fluid in the central cavity drops below a predetermined amount;

said housing having an annular recess forming a part of said central cavity and surrounding a portion of said electrical contact for forming a pocket;

said housing having holes which provide for fluid communication through the annular recess; and

said cap having a portion thereof which is transparent for the visual observation of the elongated stem as it moves longitudinally for the engagement of the piston with the

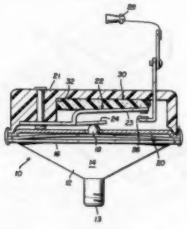
electrical contact when the fluid pressure in the central cavity drops below the predetermined amount.

4,278,857

VIBRATION RESISTANT ELECTRICAL SWITCH

Theodore A. Wernimont, Burlington, Iowa, assignor to J. I. Case Company

Filed Jan. 25, 1980, Ser. No. 115,459
Int. Cl.³ H01H *35/34*
U.S. Cl. 200—83 R **3 Claims**



1. A pressure-actuated electrical switch assembly for actuating a warning device in response to a substantial drop in fluid pressure in a hydraulic circuit, said assembly comprising:

a dome-lime container having a base, an entry port in said base being connected to said hydraulic circuit, said container being divided interiorly by a diaphragm into upper and lower sealed chambers, said lower chamber receiving fluid pressure through said entry port;

a button actuator being fixed to one side of said diaphragm, said button actuator being movable vertically upward in response to fluid pressure in said lower chamber against a second side of said diaphragm which deflects said diaphragm;

a cap enclosing said upper chamber, a contact arm being mounted at one end to said cap, said contact arm being bifurcated into a spring leg portion and a contact support leg portion, said contact support leg portion being cantilevered and vertically spaced above said spring leg portion;

a first electrical contact being mounted at one end of said support leg portion and a second electrical contact being fixed to said cap and being aligned with said first electrical contact, said button actuator pressing upwardly on said spring leg portion in response to fluid pressure in said lower chamber to keep said contacts separated or open; and

a dampening member being mounted to said cap, said dampening member engaging said contact support leg when said contacts are open to dampen any vibration experienced by said contact arm thereby preventing fatigue in said contact arm.

4,278,858

LIQUID LEVEL RESPONSIVE PROXIMITY SWITCH

Donald A. Kaessen, Ashland, Ohio, assignor to The Marley-Wylain Company, Mission, Kans.

Continuation-in-part of Ser. No. 558,940, Mar. 17, 1975, abandoned. This application Sep. 17, 1976, Ser. No. 724,247
Int. Cl.³ H01H *35/18*
U.S. Cl. 200—84 B **29 Claims**

1. A proximity switch for starting and stopping electric pump motors comprising;

a casing having a transverse wall to partially establish and separate a sealed inner chamber and a downwardly opening outer cylindrical chamber;

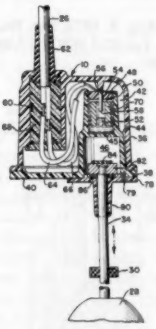
an hermetically sealed, cylindrical reservoir in said inner chamber overlying said outer chamber and in coaxial alignment therewith, said reservoir being partially filled by conductive liquid and spaced from said outer chamber by an electrically insulating transverse dividing wall;

an annular magnetic float having an axial central opening and normally supported on said conductive liquid;

a first electrode on the cylindrical inner surface of said reservoir near the lower end thereof and thus normally contacting said conductive liquid;

a second depending post-like electrode in said reservoir and having a contact portion normally positioned above the level of said conductive liquid and having a transverse dimension to fit within the central opening of said annular magnetic float;

a magnetic actuating member supported for linear movement along the axis of said outer chamber between a lower switch-opening position spaced from said magnetic float



and an upper switch-closing position in which said float is magnetically attracted to said actuator and in which said float and said actuator are magnetically retained against opposite sides of said transverse dividing wall to displace said conductive liquid upwardly in said reservoir to submerge the contact portion of said second electrode and thereby establish circuit continuity between said electrodes; and

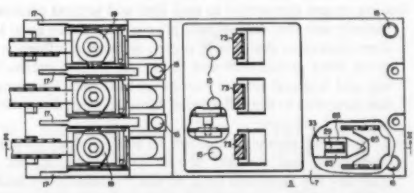
means to move said magnetic actuating member between said lower and upper positions in response to independent external liquid level variations and by magnetic attraction thereof with said magnetic float in the region of said upper position, whereby movement of such magnetic attraction will effect an essentially instantaneous displacement of said magnetic float.

4,278,859

CIRCUIT BREAKER STRUCTURE

Russell T. Borona, Seymour, Conn., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 15, 1978, Ser. No. 970,046
Int. Cl.³ H01H *33/04*
U.S. Cl. 200—144 R **3 Claims**



1. A circuit breaker comprising a stationary contact, a movable contact, a contact arm carrying said movable contact, the stationary contact being mounted on a bus, the bus having a

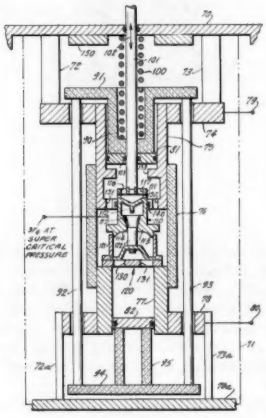
side surface facing the contact arm, a manual operating member movable to a closed position, an insulation member between the bus and the contact arm, the insulation member comprising a dielectric, heat-resistant material mounted on the bus and extending from the stationary contact, and end portion of the member adjacent to the stationary contact being secured in place by a tape wrapped around the assembled member, and the bus and the tape comprising a gas-emitting ingredient activated by heat to create a gaseous atmosphere between the bus and the contact arm to minimize arc restriking conditions.

4,278,860

ARC DRIVEN SINGLE PRESSURE TYPE CIRCUIT BREAKER

Jiing-Liang Wu, Chalfont, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Aug. 3, 1979, Ser. No. 63,132
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 R **5 Claims**



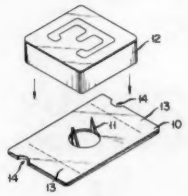
1. An electrical interrupter comprising:
contact means separable to produce an electric arc in an arcing region;
an elongated enclosure means enclosing said arcing region; said enclosure means having first and second cylinder regions on opposite respective ends thereof; said contact means supported within said enclosure means;
high density electronegative fluid at supercritical pressure filling said enclosure means and said arcing region;
first and second coaxial pistons slidably disposed in and sealing said first and second cylinders respectively; said first piston having a greater area exposed to said fluid than said second piston, and mechanical means fixing said first and second pistons to one another whereby they move simultaneously and in the same axial direction;
biasing means connected to said first and second pistons for biasing said first and second pistons to a given axial location relative to said arcing region under the influence of a given fluid pressure of said fluid; said biasing means biasing said first and second pistons for movement in an opposite direction to the differential force on said pistons due to said fluid pressure;
and operating means connected to said contact means for separating said contact means and producing an arc, whereby the increased fluid pressure produced by said arc moves said first and second pistons and moves said fluid through said arcing region, and whereby pressure surges are limited by the expansion of the volume within said enclosure means due to the movement of said pistons therein.

4,278,861

KEY BUTTON STRUCTURE FOR ELECTRONIC DEVICES

Akio Matsuzaki, Tokorozawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1979, Ser. No. 62,806
Claims priority, application Japan, Aug. 23, 1978, 53-115312[U]
Int. Cl.³ H01H *3/12*; B41J *5/12*
U.S. Cl. 200—340 **6 Claims**



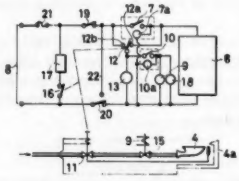
1. A key button structure for electronic devices comprising:
a key button body made of a metal, said key button body having a top and a substantially flat bottom portion; and
a planar, thin metal plate contacted with the bottom surface of said key button body, said thin metal plate having an area wider than the area of the bottom of said key button body and forming a collar portion relative to said key button body, said planar, thin metal plate having at least one projection having a sharp tip, the projection being bitten or impaled into the bottom of the key button body so that said key button body and said metal plate are connected together, the wider areas of said thin metal plate projecting outwardly of said key button body to form said collar.

4,278,862

COMBINATION MICROWAVE AND GAS OVEN

Sueo Mizuno, Nagoya; Toshihiro Nozu, Aichi; Yoshihiro Kanaya, and Masahiko Koumura, both of Konan, all of Japan, assignors to Rinnai Kabushiki Kaisha, Nagoya, Japan

Filed Jan. 17, 1980, Ser. No. 113,040
Claims priority, application Japan, Jan. 25, 1979, 54-7100[U]
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **7 Claims**



1. A heat cooking device of the type comprising: a cooking device main body having therein a heating chamber with microwave heating means; gas heating means and a cooling fan for said microwave heating means; a first operation circuit for operating said microwave heating means connected to an electric power source through a first switching circuit; a second operation circuit for operating said gas heating means connected to said electric power source through a second switching circuit and a switch arranged to be operated with a gas cock; a driving circuit for said cooling fan connected to said switch so as to be in parallel with a circuit connecting in series said second operation circuit and said second switching circuit; said switch having a first contact connected to said electric power source through said first switching circuit and

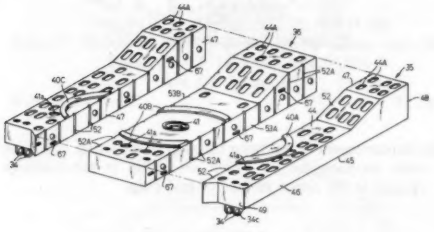
having a second contact connected to said electric power source without passing through said first switching circuit and being arranged to be connected to said first contact when the gas cock is closed and to the second contact when the gas cock is opened.

4,278,863

METHOD OF MAKING WELDED STRUCTURE

Robert D. Myers, West Allis, Wis., assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Aug. 20, 1979, Ser. No. 67,875
Int. Cl.³ B23K *25/00*
U.S. Cl. 219—73.1 **8 Claims**



1. A method of fabricating a structure comprising the steps of:

providing a pair of metallic members which are to be joined together to form said structure, said members having surfaces which abut when said pair of members are joined together;

forming grooves in said surfaces of said members which align to define passages when said pair of members are joined together;

temporarily joining together said members with said grooves aligned to define said passages;

performing a machining operation on said members while said members are temporarily secured together so as to provide a first finished surface on one member which is precisely aligned with a second finished surface on the other member;

disjoining said members after said machining operation is performed and transporting said members to another location;

rejoining said members together at said other location with said grooves aligned to define said passages and with said first and second finished surfaces precisely realigned;

filling said passage with molten welding material which fuses to the sides of said passage;

and allowing said molten welding material to cool and solidify in said passage to join said metallic members together.

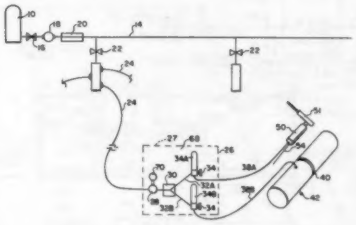
4,278,864

WELDING GAS SHIELD CONTROL

Claude De Facci, 22536 Lake Shore Dr., Richton Park, Ill. 60471, and Peter C. Duerr, 4757 W. 175th Pl., Country Club Hills, Ill. 60477

Filed Feb. 21, 1979, Ser. No. 13,024
Int. Cl.³ B23K *9/16, 9/32*
U.S. Cl. 219—75 **8 Claims**

3. A readily portable, security protected, fixed pressure shielding gas output regulator for use at a welding site remote from a source of shielding gas comprising a portable cabinet including a bottom wall, a top wall, two sidewalls and a back wall forming an enclosure having an open front side, said sidewalls, backwall and topwall being joined to form an integral unit removably secured to said bottom wall, a pressure reducing regulator means mounted in said enclosure adjacent the back wall thereof and having an inlet for receiving shielding gas from a supply conduit, said pressure reducing regulator means operating to supply shielding gas at a predetermined working pressure to first and second outlets thereof, and first and second adjustable flow metering means mounted within said enclosure between said pressure reducing means and the open front side of said enclosure and each connected to receive shielding gas at said predetermined working pressure from one of said outlets, each said first and second flow metering means including an outlet port positioned for access from the open front of said enclosure, a rate of flow control valve means operative to vary the rate of flow of the shielding gas to said



outlet port, control means for each said rate of flow control valve means manually accessible from the exterior of said enclosure through the open front side thereof, and flow indicator means connected to each of said first and second flow metering means and operating to indicate the rate of gas flow through said flow control valve means, said flow indicator means being positioned for visual observation through the open front side of said enclosure, and first and second flow metering means being positioned to block access to said pressure reducing regulator means from the open front side of said enclosure.

4,278,865

GAS SHIELDED STUD WELDING METHOD

Hiroyuki Watanabe, Toyotashi; Eiji Miyoshi, Suitashi; Haruo Kojima, Toyotashi; Takeshi Yoshida, Nagoyashi; Masaaki Kato, and Shizuo Miyazaki, both of Toyotashi, all of Japan, assignors to Nippon Stud Welding Co. Ltd., Tokyo, Japan

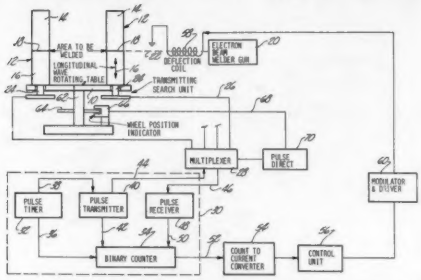
Filed Apr. 16, 1979, Ser. No. 30,467
Claims priority, application Japan, Apr. 19, 1978, 53-45255
Int. Cl.³ B23K *9/20*
U.S. Cl. 219—99 **1 Claim**

1. In a method of welding a stud to a base metal using the stud as an electrode and using an inert mixed gas as an arc shield, the improvement wherein said stud is used as the positive electrode and said base metal as the negative electrode, and wherein said inert mixed shielding gas consists essentially of carbon dioxide and argon in a ratio of approximately two parts of carbon dioxide to five parts of argon.

4,278,866
AUTOMATIC ELECTRON BEAM DEFLECTING CIRCUIT

Glenn T. Nevins, Muskegon, and William A. Keely, Hesperia, both of, Mich., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Dec. 5, 1975, Ser. No. 637,889
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—121 EC **7 Claims**



1. For use in conjunction with a workpiece positioned on a work table, said workpiece having a substantially planar interface spaced from the work table, an apparatus for welding said interface comprising:

sounding means operatively coupled at one end of said workpiece for generating an ultrasonic sense wave pulse along said workpiece to said interface;

receiving means operatively coupled at the lastmentioned end of said workpiece for receiving an echo of said sense wave from the interface in said workpiece;

an electron beam welding gun adapted to generate an electron welding beam toward said workpiece, wherein said electron beam is substantially parallel to said interface and substantially perpendicular to the path of said sense wave;

timing means for determining the elapsed time between the generation of said sense wave pulse by said sounding means and the receipt of said echo by said receiving means, wherein said elapsed time is representative of the distance from said work table to said interface;

means responsive to said elapsed time determined by said timing means for deflecting the electron beam in a direction substantially parallel to said path of the sense wave so that said electron beam impinges upon said interface and welds the same.

4,278,867
SYSTEM FOR CHIP JOINING BY SHORT WAVELENGTH RADIATION

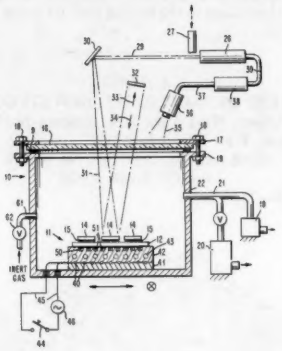
Swie-In Tan, Bedford Hills, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,595
Int. Cl.³ B23K *26/02, 26/12*
U.S. Cl. 219—121 LD **10 Claims**

1. In a system for joining a chip to metal surfaces on a substrate, said chip having an upper and a lower surface and having circuitry on the lower surface thereof along with areas bearing chip joining metal for joining to said metal surfaces when heated, said chip joining metal being employed for connection to said metal surfaces on said substrate,

the improvement comprising energy means for directing radiation with wavelengths to which said chip is substantially opaque at the upper surface of said chip.

6. In a method of joining a chip to metal surfaces on a substrate, said chip having an upper surface and a lower surface and having circuitry on the lower surface thereof along with areas bearing chip joining metal for joining to said metal surfaces when heated, said chip joining metal being employed for connection to said metal surfaces on said substrate,

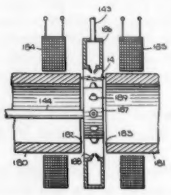


the improvement comprising the step of directing radiation with wavelengths to which said chip is substantially opaque at the upper surface of said chip.

4,278,868
METHODS AND APPARATUS FOR HEATING METAL PARTS WITH MAGNETICALLY DRIVEN TRAVELLING ELECTRIC ARC

Wallace C. Rudd, New Canaan, and Humfrey N. Udall, Darien, both of Conn., assignors to Thermatool Corp., Stamford, Conn.

Division of Ser. No. 861,703, Dec. 19, 1977, Pat. No. 4,219,722.
This application Oct. 19, 1979, Ser. No. 86,472
Int. Cl.³ B23K *9/08*
U.S. Cl. 219—123 **5 Claims**



1. In apparatus for heating the facing and spaced ends of a pair of tubes by means of an electric arc including n arc current source having terminals at different potentials, one terminal being connected to one tube and another terminal being connected to the other tube, and magnetic field means producing a magnetic field in the space between said ends for causing said electric arc to traverse said ends along paths extending in the circumferential direction with respect to the axes of said tubes, said magnetic field means also causing the arc to travel completely around said axes of said tubes within a predetermined time interval, the combination therewith of magnetic field varying means adjacent said ends and modifying the direction of the magnetic field to which the arc is subjected a plurality of times during said interval so as to subject the arc to magnetic forces directed alternately radially inwardly and radially outwardly a plurality of times during said interval whereby said arc moves alternately inwardly toward and outwardly from the axes of said tubes a plurality of times during each traverse of said ends.

2. A method of heating an end surface of a metal tube by means of an electric arc extending between said surface and a conductive member, said member having a surface adjacent but spaced from, and conforming in shape to, said first-men-

tioned surface, said method comprising initiating said arc between said surface of said tube and said surface of said member, magnetically deflecting said arc along said surface of said tube by means of a magnetic field and causing said arc to traverse the entire circumferential length of said last-mentioned surface a plurality of times and further deflecting said arc radially inwardly toward and outwardly of the axis of said tube a plurality of times during each traverse of said surface of said tube by modifying the magnetic field to which the arc is subjected a plurality of times during each traverse of said surface by the arc and along a different path on said last-mentioned surface during each successive traverse of said last-mentioned surface by said arc.

4,278,869

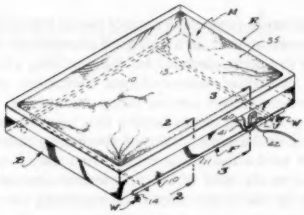
INSTRUMENT MOUNTING FIXTURE

James P. McMullan, 2630 Seaman Ave., El Monte, Calif. 91733

Filed Nov. 13, 1979, Ser. No. 94,036

Int. Cl.³ H05B *3/00*

U.S. Cl. 219—217 **12 Claims**



1. In combination, a mattress supporting box-spring comprising a lower flat horizontal wood frame with longitudinal side beams with downwardly and laterally outwardly disposed surfaces, a soft flexible normally flat horizontal pad in vertical spaced relationship above the frame and spring means between the frame and the pad; a soft flexible mattress above and supported by the pad; an electric resistance heater adjacent the mattress to maintain the mattress at a desired temperature; a temperature control unit for the heater positioned outward of and adjacent one side of the box-spring; a power cord extending from the control unit to the heater and a service cord extending from the unit to a power supply; and a unitary mounting fixture mounting the control unit adjacent said one side of the box-spring unit between the top and bottom planes thereof and comprising a lower portion with a lower horizontal flange adjacent and fastened to the lower surface of a related beam and a vertical flange adjacent and fastened to the outside surface of that beam; an upper plate portion with a laterally outwardly disposed outer surface laterally outward of the box-spring and a vertical intermediate portion integrally joining said upper and lower portions; said control unit includes a housing with a rear surface positioned adjacent said outside surface of the plate; and means carried by the plate releasably securing the housing to said plate.

4,278,870

DENTAL MIRROR WARMER

John S. Carleton, 2009 Belmeade, Brownwood, Tex. 76801, and Karl A. Senghaas, 434 Forest Hill Dr., San Antonio, Tex. 78209

Filed Jul. 6, 1979, Ser. No. 55,172

Int. Cl.³ H05B *1/02*; A61B *1/24*

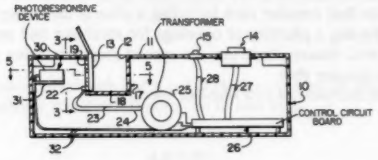
U.S. Cl. 219—219 **5 Claims**

1. An apparatus for warming a dental mirror of the type having a handle and a reflective portion before use to prevent fogging thereof comprising the combination of

a housing;

a heating well supported in said housing, said well having a plurality of walls, at least one of said walls being made of an electrically conductive material, said at least one wall being capable of generating heat when an electric current is passed therethrough, said well being sufficiently large to receive the reflective portion of a dental mirror and sufficiently small to keep said reflective portion in close proximity to said at least one wall;

means in said housing defining an access opening adjacent said well for permitting insertion of at least the reflective portion of said mirror into said well in heat exchange relationship to said at least one electrically conductive wall;



means connectable to a source of electrical power for providing current to said at least one conductive wall for heating said wall;

means in a wall of said well defining a light transmissive portion therethrough;

photoelectric means mounted in said housing including means for transmitting light into and receiving reflected light from the reflective portion of a mirror in said well through said light transmissive portion and for producing a control signal in response to said reflected light; and

circuit means responsive to said control signal for actuating said means for providing current to said at least one conductive wall for a limited predetermined time interval.

4,278,871

ARRANGEMENT FOR EFFECTING THE SUPERFINE PERFORATION OF FILM-LIKE SHEETING WITH THE AID OF HIGH-VOLTAGE PULSES

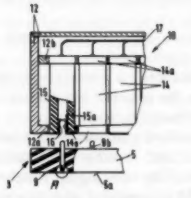
Klaus-Peter Schmidt-Kufeke, Bernhardstr. 5, 7500 Karlsruhe 1, and Gerhard Feld, Am Erlanger 3, 8501 Eckenthal, both of Fed. Rep. of Germany

Filed Jul. 2, 1979, Ser. No. 54,237

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1978, 2830326

Int. Cl.³ H05B *7/18*

U.S. Cl. 219—384 **10 Claims**



1. An arrangement for electrically perforating a film-like sheet by means of high-voltage pulses, comprising an energizing circuit arrangement, a first stationary electrode including a first multi-row needle field member carrying a plurality of needles and a first connecting board to electrically connect said first needle field member to said energizing circuit arrangement; a second stationary electrode including a second multi-row needle field member carrying a plurality of needles and a second connecting board to electrically connect said second needle field member to said energizing circuit arrangement; said first multi-row needle field member being arranged

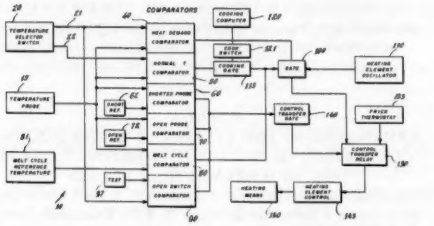
at an equally spaced distance from said second multi-row needle field member to receive in a space therebetween said film-like sheet adapted for advancing movement along said members, said circuit arrangement including a transformer for generating the high-voltage pulses, said needles of said first needle field member being aligned in a mirror-inverted arrangement to said needles of said second needle field member and having point ends and pointless ends the latter of which directed toward said connecting boards respectively; and a series of high-ohmic resistors mounted in said first connecting board, said pointless ends of said needles being arranged in a direct conductive connection with said corresponding high-ohmic resistors, said first needle field member and said second needle field member each including a plate of insulating material having a plurality of openings for receiving said needles, and said distance between the spaced members being somewhat greater than
the thickness of said film-like sheet.

4,278,872

TEMPERATURE CONTROLLER WITH PULSED HEATING DURING IDLE

Bernard G. Koether, Westport, and Gary G. Matison, Wilton, both of Conn., assignors to Food Automation-Service Techniques, Inc., Stratford, Conn.

Filed Jul. 30, 1979, Ser. No. 62,069
Int. Cl.[3] H05B 1/02
U.S. Cl. 219—497 **16 Claims**



1. A temperature controller for use with a fryer of the type comprising a vat containing cooking oil, heating means for heating the cooking oil and a heating element control for operating the heating means, the temperature controller comprising:

(A) a temperature sensor for sensing the temperature of the cooking oil;

(B) a temperature selector for selecting a selected temperature for the cooking oil;

(C) means establishing a normal temperature range extending between the selected temperature and a temperature below the selected temperature;

(D) comparator and gate means operating the heating element control and thereby the heating means when the temperature of the cooking oil is below the selected temperature, said comparator and gate means operating the heating element control and thereby the heating means

(1) in a full on mode when the temperature of cooking oil is below the selected temperature and cooking is taking place or when the temperature of the cooking oil is below the normal temperature range and

(2) in a pulsed mode when the temperature of the cooking oil is in the normal temperature range and no cooking is taking place,

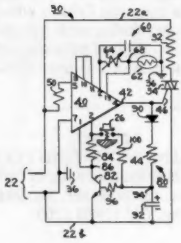
whereby overshoot of the temperature of the cooking oil above the selected temperature is minimized when the cooking oil is heated with the fryer in noncooking operation.

4,278,873

TEMPERATURE-RESPONSIVE CONTROL MEANS

Christie Petrides, Monroe, Conn., assignor to General Electric Company, New York, N.Y.

Filed Feb. 4, 1980, Ser. No. 117,966
Int. Cl.[3] H05B 1/02
U.S. Cl. 219—501 **9 Claims**



1. Temperature-responsive control means for controlling the electric power input from a source of alternating current electric power to a series electric circuit comprising a heater and a first gate controlled semiconductor switching means, said temperature-responsive control means comprising:

a pulse-generating means having first input means for connection to the same source of alternating current electric power as the heater circuit and first output means connected to the gate of the first semiconductor switching means in the heater circuit for supplying turn-on pulses thereto,

first temperature sensing means for sensing a temperature associated with the heater circuit, said first temperature sensing means having an output means connected to a second input means of said pulse-generating means, said first temperature sensing means being responsive to the sensed temperature to supply to said second input means an input signal having a magnitude within a first range of magnitudes when the temperature is within an acceptable range and a second range of magnitudes when the temperature is within an unacceptable range,

second sensing means coupled to said first output means of said pulse-generating means and having an output means connected to a third input means of said pulse-generating means, said second sensing means being responsive to the output of said first output means to supply to said third input means an input signal having a magnitude within a first range of mangitudes when turn-on pulses are being supplied from said first output means and a second range of magnitudes when turn-on pulses are not being supplied from said first output means,

said pulse-generating means being responsive to the simultaneous application of both an input signal to said second input means having a magnitude within said respective first range of magnitudes and an input signal to said third input means having a magnitude within said respective first range of magnitudes to generate and deliver turn-on pulses to said first output means, and said pulse-generating means being responsive to either an input signal to said second input means having a magnitude within said respective second range of magnitudes or an input signal to said third input means having a magnitude within said respective second range of magnitudes to prevent the generation and delivery of turn-on pulses to said first output means, and

manually operated means coupled to said second sensing means selectively operable to cause said second sensing means to supply to said third input means an input signal having a magnitude within said respective first range of magnitudes whether or not turn-on pulses are being supplied from said first output means, whereby the produc-

tion of turn-on pulses may be initiated only upon activation of said manually operated means at a time when the sensed temperature is within the acceptable range.

4,278,874

HEATING CIRCUITS

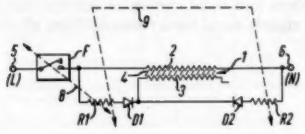
Graham M. Cole, Lymington, England, assignor to Dreamland Electrical Appliances Limited, Southampton, England

Filed Aug. 8, 1979, Ser. No. 64,621

Claims priority, application United Kingdom, Aug. 24, 1978, 34538/78

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—505 **9 Claims**



1. In a heating circuit comprising input terminals for connection to an AC supply, a first elongate conductor connected between said input terminals to effect heating, a second elongate conductor substantially coextensive with said first conductor, and elongate separating means that separates said first and second conductors and is in contact with each of said first and second conductors, said separating means having a relatively high impedance at least at normal working temperatures, and said separating means being of such a nature that in the event of overheating said impedance will drop to a relatively low value and/or it will melt to permit contact of said first and second conductors whereby said impedance will drop to substantially zero, the improvement comprising:

a first half-wave rectifier means and a first resistor connected in series between one end of said first conductor and one end of said second conductor to permit current to flow through the first half-wave rectifier means, the first resistor and said impedance when the AC supply is of a first polarity;

a second half-wave rectifier means and a second resistor connected in series between the other end of said first conductor and one end of said second conductor to permit current to flow through the second half-wave rectifier means, the second resistor and said impedance when the AC supply is of the other polarity; and

circuit interruption means responsive to current flow through one or both of the first and second resistors indicating that said impedance has dropped in value as a result of overheating, said circuit interruption means acting to disconnect the heating circuit from the AC supply.

4,278,875

ELECTRICALLY HEATED WINDOW

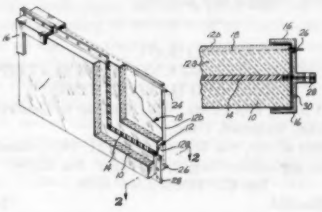
Peter H. Bain, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 19, 1979, Ser. No. 105,389

Int. Cl.³ H05B *3/06*

U.S. Cl. 219—522 **9 Claims**

1. A transparent window comprising a structurally unitary, electrically heatable window pane, said window pane having a substantially transparent layer of an electroconductive material sandwiched between and fused directly to first and second sheets of glass fused directly together, and means forming an



electrical contact with said layer of electroconductive material for applying an electrical potential to said layer.

4,278,876

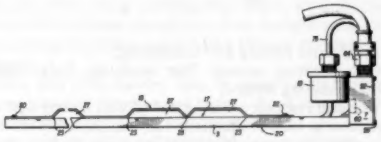
THERMOSTATICALLY CONTROLLED HEATER

Paul F. Savoca, 66 The Helm, East Islip, N.Y. 11740, and Melvin Lindner, 387 Plymouth St., West Hempstead, N.Y. 11552

Filed Aug. 31, 1979, Ser. No. 71,728

Int. Cl.³ H05B *3/58*

U.S. Cl. 219—535 **5 Claims**



1. A thermostatically controlled heater that can be seated on a plate-like metal workpiece that is to be welded, for heating the workpiece to within a selected temperature range prior to the welding process and for maintaining it in that temperature range, comprising:

(a) an elongate electrical resistance heating element of rod-like structure that is electrically connected to a source of electric power through a thermostat assembly that is disposed to control the power applied to said electrical resistence heating element;

(b) a heat conductive thermal shoe having a recessed portion in its upper surface, said heating element having a major portion thereof disposed in said recess in thermal contact with said shoe, said shoe having a lower face that forms a heat transfer surface for transferring the heat generated by said heating element to a workpiece on which the heater is seated with its lower face confronting and engaged against the surface of the workpiece;

(c) a reflective plate disposed over the upper surface of said shoe, covering said recess and the portion of the heating element disposed therein, said reflecting plate retaining said heating element in said recess; and

(d) a thermostat assembly that is thermally and mechanically connected to said shoe, including a heat conductive housing, a mounting means for thermally and mechanically connecting said heat conducting housing to said shoe at one end of said shoe and in spaced relation to the nearest part of said electrical resistance heating element, and a thermostat temperature sensing element mounted within said housing and electrically connected between said electric resistance heating element and said source of electric power, for controlling the electric power that is applied to said electrical resistance heating element, said thermostat having said thermal sensing means disposed with and thermally connected to a portion of said heat conductive housing at which the heat gradient between said portion of the housing and sai thermal shoe substan-

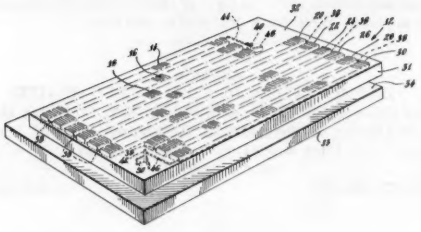
tially matches the heat gradient between said shoe and said workpiece, whereby said thermostat can be used to maintain the temperature of said workpiece within a selected temperature range by sensing the temperature of said shoe through said housing.

4,278,877

ELECTRICAL HEATING UNIT WITH FLATTENED EMBEDDED HEATING COIL

Ewald R. Werych, Elm Grove, Wis., assignor to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 862,907, Dec. 21, 1977, abandoned.
This application Aug. 2, 1979, Ser. No. 62,987
Int. Cl.³ H05B *3/44, 3/50*
U.S. Cl. 219—544 **5 Claims**



1. An electric heating unit comprising:

a form-retaining ceramic fiber insulating body having a heat-radiating surface;

an elongate resistance heating coil of wire having a plurality of turns at least substantially fully embedded in situ in the ceramic fiber material of said insulating body along said heat-radiating surface;

each turn of said coil being formed with a substantially linear first segment lying generally parallel to and closely adjacent said surface of said insulating body, in contact with said ceramic material at least substantially along the entire length of said first segment, and a second segment lying generally parallel to said surface wholly within said body at a predetermined distance from said first segment;

the portion of said heat-radiating surface immediately adjacent and extending alongside said first coil segment being substantially linear in a direction parallel to said first segment;

the lateral dimension of each turn of said coil in a direction parallel to said first segment being greater than said predetermined distance; and

means extending from said insulating body making electrical connection to the ends of said heating coil.

4,278,878

PASSING PERSON COUNTING APPARATUS

Toshio Kato, Seto, Japan, assignor to Tanaka Business Machines Co. Ltd., Aichi, Japan

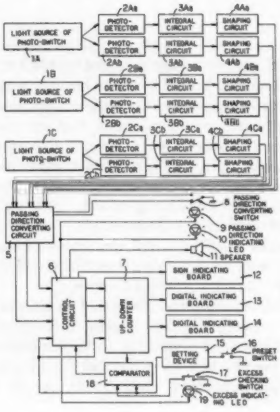
Filed May 21, 1979, Ser. No. 41,187
Claims priority, application Japan, Apr. 11, 1978, 53-136040
Int. Cl.³ G06M *3/14;* **G07C** *9/00*
U.S. Cl. 235—92 PK **10 Claims**

1. A passing person counting apparatus installed in a passageway having a nearer side, an outlet and a width allowing one person to pass through comprising:

(a) at least first and second trunk-portion-sensor groups installed in said passageway at a height of the trunk portion of human bodies to be counted and with an inter distance slightly narrower than the thinnest one of human bodies to be counted, each of said trunk-portion-sensor groups including at least a first and a second trunk portion sensor closely arranged to each other, each of said trunk portion sensors being provided with a signal sending part for sending a signal traversing substantially horizontally said passageway and a signal receiving part for receiving said signals varying in response to whether being interrupted or not;

(b) a leg-portion-sensor group including at least first and second leg portion sensors, installed in said passageway at a height of the leg portion of human bodies to be counted and between the first and second trunk-portion-sensor groups, said leg portion sensors being closely arranged to each other in the passing direction of said passageway and in the same order as said trunk portion sensors, each of said leg portion sensors being provided with a signal sending part for sending a signal traversing substantially horizontally said passageway and a signal receiving part for receiving said signal, said signals varying in response to whether being interrupted or not;

(c) means including at least three circuits and counter means coupled to said three circuits for receiving confirming signals from said three circuits to confirm that the confirming signals have been received from all three said



circuits and to indicate result of counting, said three circuits including:

(i) a first circuit coupled to said trunk portion sensors for producing a width confirming signal upon having confirmed the fact that all the signals of the trunk portion sensors have been at least for an instant simultaneously interrupted;

(ii) a second circuit coupled to said trunk portion sensors and to at least one of said leg portion sensors for producing a simultaneousness confirming signal upon having confirmed the fact that at least one signal from the trunk portion sensors was interrupted while at least one of the signals from the leg portion sensors was being interrupted; and

(iii) a third circuit coupled to at least two of said leg portion sensors and at least two of said trunk portion sensors which are installed on the nearer side to the outlet of said passageway for producing a passing-through confirming signal upon having confirmed a body, which had interrupted the signals of the leg portion sensors and the trunk portion sensors, passed through said passageway.

4,278,879
SWITCHING ARRANGEMENT FOR RECORDING A VALUE-BALANCE

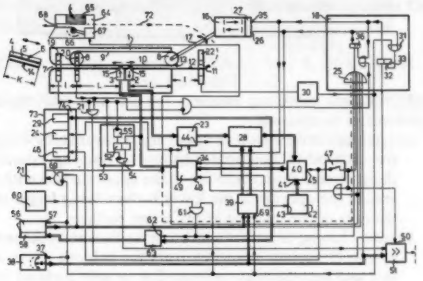
Otto Hofmann, Nuremberg, and Georg Nagler, Oberwildenau, both of Fed. Rep. of Germany, assignors to Tele-Alarm, Nachrichtentechntehe Gerate GmbH, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 51,062

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1978, 2828111

Int. Cl.³ G06K *5/00, 13/07, 19/06*

U.S. Cl. 235—380 **21 Claims**



1. A switching arrangement for the recording of value balance information on a magnetic track disposed on a charge card, the arrangement comprising:

a reader-writer device having reader and writer heads;

a debiting circuit;

a balance recording device;

a balancing circuit connected to the reader-writer device to the debiting circuit and to the balance recording device;

a reversible driving motor, the reader-writer device being coupled to the reversible driving motor and including a pair of reversing rolls;

a guide support, the reader and writer heads being inserted into the guide support;

a conveyor belt guided revolvingly on the reversing rolls and having an active segment slidably disposed on the guide support, the active segment having a forward beginning and a rear end; and

a pair of format fork couplers disposed in front of the active segment of the conveyer belt and separated in the direction of the active segment of the conveyer belt by a distance (C) less than the length (K) of the charge card measured in the direction of the magnetic track of the charge card.

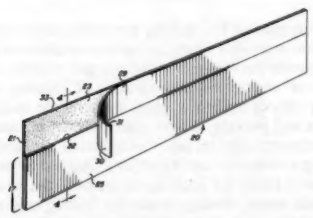
4,278,880
EXTENDED CLEAR BAND CARRIER-STRIP

Melvin S. Buros, P.O. Box 6495, Phoenix, Ariz. 85005

Filed Jan. 21, 1980, Ser. No. 113,450

Int. Cl.³ G06K *19/00, 19/06*

U.S. Cl. 235—493 **3 Claims**



1. An extended clear band for facilitating the re-encoding of documents, said documents having a rectangular shape and having an encoding receiving clear band on one face extending along one of the longer edges thereof comprising:

(a) an elongated rectangular backing member of natural high density kraft paper having a predetermined width and having a coating of rubber base pressure sensitive adhesive on one side thereof for contacting and supporting a strip member and an indicia receiving member;

(b) an elongated rectangular indicia receiving release paper member having one of the longer edges thereof in contact with said pressure sensitive adhesive and extending along said backing member, and having a width less than said predetermined width, said longer edge adapted for abutting contact with said strip member and with said document;

(c) an elongated rectangular release paper strip member releaseably secured to said pressure sensitive adhesive on said backing member and having one of the longer edges thereof in abutment with said one of the longer edges of said indicia receiving member, the other of the longer edges of said strip member being coterminous with one of the longer edges of said backing member, said strip member having a width less than said predetermined width;

(d) said indicia receiving member having a contrasting color with respect to the adhesive coated side of said backing member;

(e) said release paper strip member and said release paper indicia receiving member being formed from successive layers of encoding receiving litho paper, a barrier coating to prevent release compounds from being drawn into the encoding receiving paper, and a silicone polymer release layer;

whereby, said strip member may be removed to expose said pressure sensitive adhesive and permit the attachment of said extended clear band along the longer edge of said document adjacent said encoding and with said document edge in abutting contact with said one of the longer edges of said indicia receiving member.

4,278,881
SYSTEM TO SUPERVISE OPERATION OF A BEARING

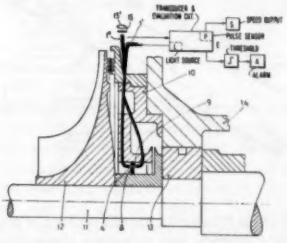
Albrecht Mann, Augsburg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft (M.A.N.), Augsburg, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,133

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2828311

Int. Cl.³ G02B *5/14*

U.S. Cl. 250—227 **16 Claims**



1. Optical supervisory system for a bearing to optically supervise the operation and condition of the bearing, having

a light source (L);

a transducer and evaluation means (15, E) receiving light and providing an evaluation output;

and comprising

two bundles (1', 1'') of light guide fibers or filaments (2), one of which (1') is in optically coupled relation to the light

source (L) and the other (1'') is in optically coupled relationship to the transducer and evaluation means (E);

each one of said bundles (1', 1'') having end cut surfaces (3) facing each other with a distance therebetween to provide a measuring zone;

a disk element (8) secured to the rotating portion of the bearing, and a ring element (9) surrounding the disk element, with a gap (4) therebetween and secured to the stationary portion of the bearing, said ring element and said disk element being positioned in said measuring zone wherein

the end cut portions of the light guide fibers or filaments cover the gap (4) and

the light guide fibers or filaments of one of said bundles transmitting light through said gap (4) to the light fibers or filaments of the other bundle (1'');

at least some of the filaments (21, 2') of said bundles are continuous from one of said bundles (1') to the other of said bundles (1''), and positioned at a distance from said disk (8) corresponding to maximum permissible deviation of said disk from a predetermined standard position to provide, upon deviation of said disk beyond said maximum permissible deviation, a positive ON/OFF signal to the evaluation and transducer means (E) by severing said continuous light fibers or filaments in dependence of deviation of said disk within or beyond the permitted range.

4,278,882

COAL ASH MONITORS

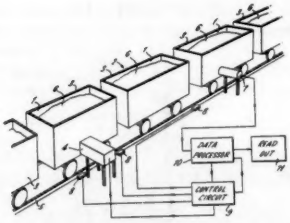
Colin G. Clayton, and Malcolm R. Wormald, both of Abingdon, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Sep. 28, 1979, Ser. No. 80,006

Claims priority, application United Kingdom, Oct. 2, 1978, 39011/78

Int. Cl.³ G01V *5/00*; G01N *23/00*; G06K *9/00*

U.S. Cl. 250—255 **18 Claims**



1. Apparatus for measuring the ash content of coal contained in a transport container, said apparatus comprising means for irradiating a known quantity of coal in a transport container with a known dose of thermal neutrons, means for detecting γ-rays having a predetermined energy emitted by the irradiated coal, the γ-rays arising from the capture of thermal neutrons by ^{27}Al present in the coal, means for producing a signal related to the intensity of the γ-ray emission from the irradiated coal, and means responsive to the said signal to provide an indication of the concentration of the ^{27}Al in the coal, thereby providing a measure of the ash content of the coal.

4,278,883

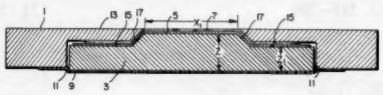
SAMPLE MOUNT FOR X-RAY DIFFRACTION

John C. Hathaway, Falmouth, and Lawrence J. Poppe, East Falmouth, both of Mass., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 27, 1979, Ser. No. 108,260

Int. Cl.³ G01N *23/20*

U.S. Cl. 250—277 CH **8 Claims**



1. A sample mounting assembly for use with an X-ray diffractometer comprising:

a membrane holder with an upper and a lower surface opposite each other, said holder having an opening extending therethrough from the lower to the upper surface with the area of the opening at the lower surface being larger than the area of the opening at the upper surface;

an insert having an upper and lower surface and adapted to fit into the holder's opening from the holder's lower surface and complementary shaped at its side surfaces with the mating edge surfaces of the holder to prevent the insert, when properly fitted therein, from moving through the holder;

a filter substrate layer larger than the area of the holder's upper opening and adapted to fit between the insert and holder in that opening, said filter being made of a material having a high mass absorption coefficient for X-rays;

a sample layer of material, which is to be subjected to X-ray diffraction analysis, mounted on said filter layer to form an exposed flat layer at the upper opening even with the adjacent upper surface of the holder, said sample overlapping the filter and being pressed at its edge between the insert and holder;

and means for holding the insert in the holder.

4,278,884

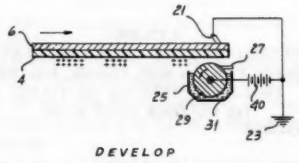
METHOD AND APPARATUS FOR XERORADIOGRAPHY

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Filed Nov. 9, 1978, Ser. No. 958,978

Int. Cl.³ G03G *15/08*

U.S. Cl. 250—315.2 **2 Claims**



1. In an apparatus for making xeroradiographs including in combination means for charging a photoconductor in the dark, exposing means for subjecting the charged photoconductor to a pattern of absorption and passage of ionizing radiations through a subject to form a latent electrostatic image of such absorption and passage, a first toning means for masking the latent electrostatic image, said toning means comprising a tank for holding a dielectric liquid carrying charged toner particles, an applicator roller for applying toner particles to said latent electrostatic image, biasing means for biasing said roller to a potential above that of the most greatly discharged areas of said latent image to prevent masking the same, means for illuminating the masked electrostatic image to enhance the

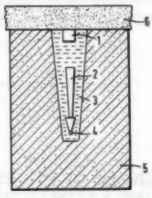
same, means for developing the enhanced electrostatic image, and means for transferring the developed electrostatic image to a carrier sheet.

4,278,885

APPARATUS FOR MEASURING THE CONCENTRATIONS OF ELEMENTS IN A MATERIAL BY THE CAPTURE GAMMA METHOD

Georg C. von Alfthan, Espoo; Tuula A. Lukander, Kauniainen; Pekka Rautala, Espoo; Heikki J. Sipilä, Espoo, and Seppo J. Uusitalo, Espoo, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed May 2, 1979, Ser. No. 35,245
Claims priority, application Finland, May 4, 1978, 781381
Int. Cl.³ G01T *1/22*
U.S. Cl. 250—370 **16 Claims**



1. An apparatus for measuring the concentrations of elements in a material by the capture gamma method, said apparatus comprising

a neutron source,

a moderator surrounding the neutron source and being at least partly constituted by heavy water,

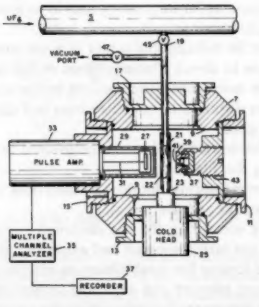
a gamma radiation detector in the form of a semiconductor detector, said detector being positioned close to the material to be measured and in a flux of slow neutrons, there being so much of the moderator between the neutron source and the detector that at most only a few fast neutrons can reach the detector.

4,278,886

IN-LINE ASSAY MONITOR FOR URANIUM HEXAFLUORIDE

Steven A. Wallace, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 21, 1980, Ser. No. 132,433
Int. Cl.³ G01J *1/42*; G01T *1/00*
U.S. Cl. 250—393 **9 Claims**



1. A method for measuring the uranium-235 enrichment of a uranium hexafluoride gas system independent of the density of the gas within the system, comprising the steps of:

cooling a radiation pervious chamber connected in fluid communication with said system to withdraw a specimen of the gas from said system into said chamber and to solidify said gas in said chamber;

irradiating said solidified specimen with a radiation source which emits ionizing radiation of an energy different from that emitted by the spontaneous gamma ray emission from uranium-235 present in said specimen;

measuring the quantity of radiation emitted by said specimen and the quantity of radiation transmitted through said specimen; and

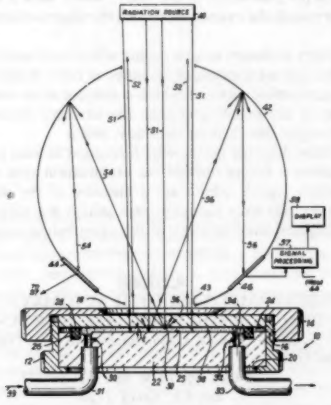
determining the fraction of uranium-235 present in said specimen relative to the total uranium present in said specimen from the respective radiation quantity measurements as a measure of the uranium-235 enrichment factor of the system.

4,278,887

FLUID SAMPLE CELL

Victor G. Lipshutz, Tarrytown, and Edward Stark, Yorktown Heights, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,563
Int. Cl.³ G01N *21/01*; G01J *1/04*; G01N *1/10*
U.S. Cl. 250—432 **11 Claims**



5. A spectroscopic analysis apparatus, comprising: a fluid sample cell including a sample compartment for the containment of a fluid sample to be analyzed, said compartment being defined by a radiation-transmitting window and a diffuse reflector spaced from said window, opposing surface portions of said window and said diffuse reflector being supported in spaced fashion, inlet and outlet ports extending into said compartment for passing successive fluids samples, in turn, through said compartment, a radiation energy source for directing energy through said window and into said compartment, and means for collecting radiation scattered, whether in a forward or back direction, and radiation transmitted by said sample contained within said compartment, at least a portion of said forward scattered and transmitted radiation being reflected back from said diffuse reflector and through said sample, so as to minimize the effects of variations in light scattering on the accuracy of the spectroscopic measurement.

4,278,888
APPARATUS FOR DETERMINING THE SPATIAL DISTRIBUTION OF THE ABSORPTION OF RADIATION IN A BODY

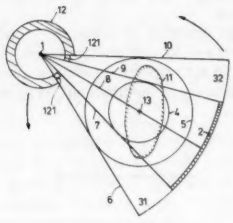
Wolfgang Wagner, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1979, Ser. No. 5,734

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1978, 2802593

Int. Cl.³ G03B *41/16*

U.S. Cl. 250—445 T **9 Claims**



1. In apparatus for determining the spatial distribution of the absorption of radiation in a body of the type which includes principal radiation source means which radiate an examination area with penetrating radiation and principal detector means disposed opposite the principal source means, which detect the intensity of radiation from the principal source means which passes through the body, and which further defines a positioning area for placement of the body, which area is larger than and surrounds the examination area, the improvement comprising:

auxiliary radiation source means which emit auxiliary radiation into an area which includes an outer boundary of the examination area and which is tangent to an outer boundary of the positioning area, the auxiliary radiation being strongly absorbed by the body, and a

auxiliary detector means which respond at least to auxiliary radiation falling outside the examination area and which supply signals which are a measure of the distance between auxiliary radiation rays which are tangent to the body and the boundary of the examination area.

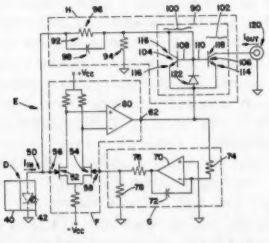
4,278,889
CURRENT AMPLIFIER WITH AUTOMATIC DRIFT CORRECTION FOR TOMOGRAPHIC SCANNERS

Joseph W. Erker, Aurora, Ohio, assignor to Ohio Nuclear, Inc., Solon, Ohio

Filed Oct. 15, 1979, Ser. No. 84,777

Int. Cl.³ G01T *1/20*

U.S. Cl. 250—445 T **15 Claims**



1. A computerized tomographic scanning apparatus for examining a planar slice of an object within a scan circle with radiation and producing a representation of an image of the planar slice comprising:

a source of radiation for producing a generally planar array of radiation;

at least one radiation detector for producing electrical signals in response to received radiation from the source;

a current amplifier comprising a first amplifier means having a first input operatively connected with said detector, and a current mirror means comprising a current receiving section for receiving current signals and a current generating section for generating a mirror current proportional to the current signals received by the current receiving section, said current mirror means operatively connected with said first amplifier means and said current receiving section being operatively connected with said first input; and

processing means for producing the representation of an image, said processing means being operatively connected with said current generating section.

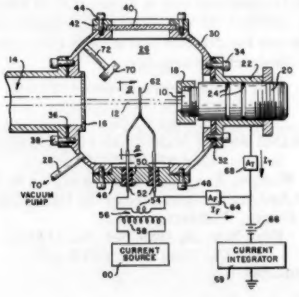
4,278,890
METHOD AND MEANS OF DIRECTING AN ION BEAM ONTO AN INSULATING SURFACE FOR ION IMPLANTATION OR SPUTTERING

Dieter M. Gruen, Downers Grove; Alan R. Krauss, Naperville, and Barry Siskind, Downers Grove, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 1, 1977, Ser. No. 812,936

Int. Cl.³ G21K *5/04*; C23C *15/00*

U.S. Cl. 250—492 B **1 Claim**



1. An apparatus for implanting ions in an electrically insulating target comprising:

a support for holding the target in a vacuum region;

an ion gun to direct a beam of ions at the target;

means for maintaining the vacuum in the vacuum region;

a filament disposed to emit electrons in a direction to reach the target;

a controllable electrical source connected to the filament for heating the filament;

means for measuring the flow of electrical current between the filament and the target;

means for measuring the net electrical current flowing between the target support and electrical ground;

a voltage source for establishing an electrical bias between the target support and electrical ground; and

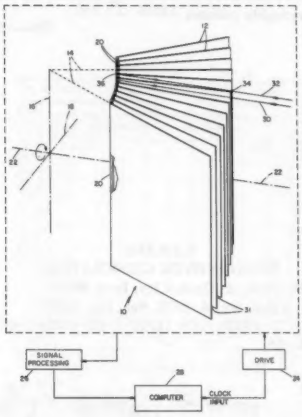
a current integrator for integrating the current between the filament and the target as a function of time.

4,278,891

FAR FIELD IMAGING

Christopher H. Tosswill, Sturbridge, Mass., assignor to Galileo Electro-Optics Corp., Sturbridge, Mass.

Filed Nov. 17, 1978, Ser. No. 961,671
Int. Cl.[2] G21K *1/00*; G01J *1/20*
U.S. Cl. 250—505 **8 Claims**



1. Apparatus for imaging distant radiation sources, comprising

a collimator having a multiplicity of portions transmissive of radiation from a said source,

the transmissivities of said portions to radiation reaching the collimator from a given said source being different from portion-to-portion for a given orientation of said collimator,

means for varying said transmissivities over time, and

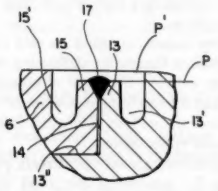
means for detecting the radiation passing through each said portion for successive values of its transmissivity.

4,278,892

RADIOACTIVITY-SHIELDING TRANSPORT OR STORAGE RECEPTACLE FOR RADIOACTIVE WASTES

Heinrich Baatz, Essen, and Dieter Rittscher, Heiligenhaus, both of Fed. Rep. of Germany, assignors to Steag Kernergie GmbH, Essen, Fed. Rep. of Germany

Filed Dec. 6, 1978, Ser. No. 966,951
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1977, 7737499[U]
Int. Cl.[2] G21F *5/00*
U.S. Cl. 250—506 **9 Claims**



1. A shielding transport and storage vessel for radioactive wastes, comprising:

a receptacle body cast unitarily with an upstanding wall and a bottom defining the interior of the receptacle;

a shielding cover received in said receptacle and capable of resisting radiation transmission from the interior thereof, said body being formed with a shoulder and said shielding cover with a flange resting upon and connected to said shoulder; and

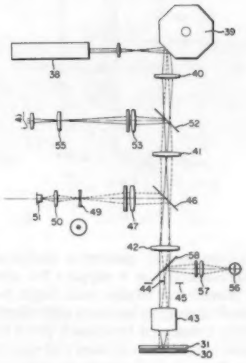
a safety cover overlying said shielding cover and hermetically sealed to said wall, said wall having an upper end formed with an annular continuous upstanding welding lip and said safety cover formed with an upstanding welding lip adjacent the welding lip of said body, the hermetic seal between said safety cover and said body being effected by a bead of weldment bridging said lips, at least one passage being cast into said body and opening at the upper end thereof, said safety cover extending beyond and overlying the opening of said passage, thereby sealing same.

4,278,893

ALIGNMENT APPARATUS

Yuzo Kato; Yasuo Ogino; Ryozo Hiraga; Hideki Yoshinari, all of Yokohama; Masao Tozuka, Ohmiya; Ichiro Kano, Yokohama, and Akiyoshi Suzuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,359
Claims priority, application Japan, Feb. 27, 1978, 53-2164
Int. Cl.[3] G01N *21/86*
U.S. Cl. 250—548 **1 Claim**



1. An alignment apparatus comprising a first support member for supporting a pattern bearing member provided with first and second alignment marks representing first and second standard points, respectively, along a first standard line, a second support member for supporting a workpiece provided with first and second alignment marks, along a second standard line, representing first and second reference points respectively, corresponding to said standard points, a member for moving at least one of said first and second support members relative to the other, means for photoelectrically scanning said alignment marks on said pattern bearing member and workpiece, and a driving member for operating said moving member to align said pattern bearing member and the workpieces by placing the first standard point within a first tolerable region and placing the second standard point within a second tolerance region, the first tolerable region being defined by an area enclosed with substantially linear lines connecting a first limit point to a third limit point, the third limit point to a second limit point, the second limit point to a fourth limit point, and the fourth limit point to the first limit point, wherein the first and second limit points represent tolerable limits in the direction of the second standard line adjacent to the first reference point, and the third and fourth points represent tolerable limits in a direction of a line perpendicularly crossing the first reference point, the second tolerable region being defined by an area enclosed with substantially linear lines connecting a fifth limit point to a seventh limit point, the seventh limit point to a sixth limit point, the sixth limit point to an eighth limit

point, and the eighth limit point to the fifth limit point, wherein the fifth and sixth limit points represent tolerable limits in the direction of the second standard line adjacent to the second reference point, and the seventh and eighth points represent tolerable limits in a direction of a line perpendicularly crossing the second reference point.

4,278,894

WIND-DRIVEN POWER GENERATOR

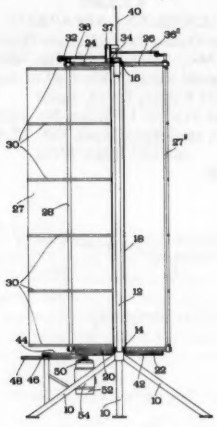
Gelindo Ciman, Via Prova 1, San Bonifacio/Verona, Italy

Filed Dec. 1, 1978, Ser. No. 965,725

Claims priority, application Italy, Dec. 16, 1977, 69812 A/77

Int. Cl.³ F03D *9/00*

U.S. Cl. 290—44 **4 Claims**



1. A wind-driven power generator comprising a pair of wheels mounted coaxially on a support for rotation about a vertical axis; a plurality of blades, each blade being rotatably mounted on a shaft extending between said wheels; and linkage means operatively connected between a point located on said support, eccentric to said vertical axis, and said shaft of each of said blades, for forcing each blade to rotate from a radial position to a tangential position during half a revolution of said wheels about said axis, and from said tangential position back to said radial position during the next half revolution.

4,278,895

HYDROELECTRIC POWER STATION

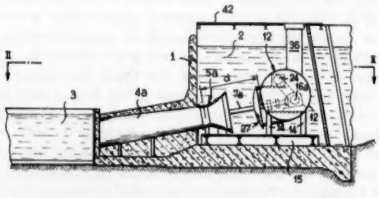
Pierre Cros, Paris, France, assignor to Spie-Batignolles, Puteaux, France

Filed Nov. 29, 1979, Ser. No. 98,550

Claims priority, application France, Dec. 14, 1978, 78 35189

Int. Cl.³ F03B *13/08*

U.S. Cl. 290—52 **17 Claims**



1. A low-head hydroelectric power station comprising a dam forming an upstream pool and a downstream pool in a watercourse, at least one turbine having a turbine runner located within a high flow-velocity passageway formed at the base of the dam, and at least one electric generator coupled to the turbines and housed within a totally submerged casing, wherein said generator casing is located within the upstream pool at a distance from the dam and the turbine and upstream of the high flow-velocity zone, said casing being provided with an inspection shaft having an opening located above the normal water level and fixed on a flooring structure in a demountable and removable manner.

4,278,896

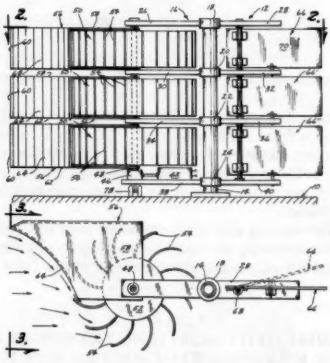
WIND POWER GENERATOR

Douglas F. McFarland, Davis City, Iowa 50065

Filed Jun. 4, 1979, Ser. No. 45,059

Int. Cl.³ F03D *9/00;* **H02P** *9/04;* **F03D** *7/00*

U.S. Cl. 290—55 **5 Claims**



1. A wind power generator comprising,

a vertically disposed support member,

a support means rotatably mounted about a first vertical axis on said support member and extending horizontally laterally therefrom,

at least one rotor means rotatably mounted on said support means about a second vertical axis situated on one side of said first vertical axis and radially spaced therefrom, said rotor means including a plurality of rotor blades dwelling in a vertical plane,

a wind deflector means mounted on said support means in stationary relation thereto for deflecting the wind towards said blades to improve the angle of attack of the wind on said blades and for shielding a portion of said rotor means from the wind to prevent the wind from inhibiting the rotation of said rotor means,

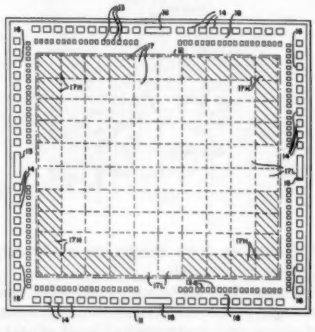
an electrical generator means operatively connected to said rotor means for generating electrical energy upon said rotor means being rotated by the wind,

and a stabilizer assembly mounted on said support means on the opposite side of said first vertical axis such that said stabilizer assembly will be moved by the wind to the leeward side of said support member thereby maintaining said rotor means and wind deflector means on the windward side of said support member.

4,278,897
LARGE SCALE SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Kenichi Ohno, Tokyo; Tohru Hosomizu, Yokohama, and Kazumasa Nawata, Kawasaki, all of Japan, assignors to Fujitsu Limited, Tokyo, Japan

Filed Dec. 28, 1978, Ser. No. 974,147
Int. Cl.³ H01L *27/00*
U.S. Cl. 307—455 **10 Claims**



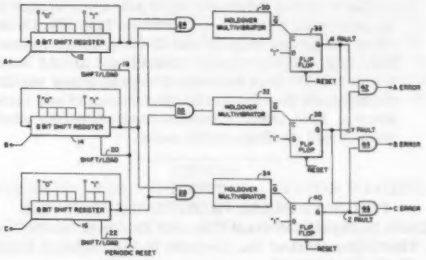
1. An LSI chip comprising:
a semiconductor substrate having a planar surface;
transistors and resistors formed with selected patterns in said surface;
metallic layers on said surface comprising means for selectively connecting said transistors and resistors;
input/output terminal pads disposed at the periphery of said LSI chip, said pads including terminal pads for supply and ground potentials for operating said LSI chip;
large transistors connected as emitter-follower circuits for outputting signals from internal logic circuits of said LSI chip, said large transistors being located near said input-/output terminal pads;
macros arranged in an array on said surface, each said macro selectively comprising said transistors and resistors to form a respective unit logic circuit, each said unit logic circuit selectively handling high and low power, said macros comprising said unit logic circuits for handling high power being selectively terminated internally and externally of said LSI chip, said macros comprising said unit logic circuits for handling low power being terminated only within said LSI chip, said transistors and resistors of said macros comprising said unit logic circuit for handling high power having dimensions that are selectively larger than the corresponding dimensions of said transistors and resistors of said macros comprising said unit logic circuits for handling low power, said macros comprising said unit logic circuits for handling high power being located at the periphery of said macro array.

4,278,898
FREQUENCY COMPARATOR FOR ELECTRONIC CLOCKS

James B. Rhode, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 13, 1979, Ser. No. 66,271
Int. Cl.³ H03K *21/00*
U.S. Cl. 307—528 **11 Claims**

1. An apparatus for indicating a frequency error in one of a plurality of electronic clocks comprising:
n input terminals, each for connection to one of said plurality of electronic clocks;
n shift registers each having an output and being connected to one of said n input terminals;
n logic gates;
each pair of said shift register outputs being connected to one of said n logic gates;
n multivibrators, each being connected to the output of one of said n logic gates; and

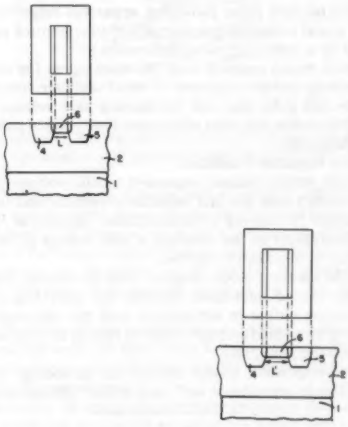


a plurality of switching means, each being connected to one of said n multivibrators, for providing an indication of which of said plurality of clocks has a frequency error.

4,278,899
ELECTRONIC CIRCUIT FOR A TIMEPIECE

Eiichi Iwanami, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 959,455
Claims priority, application Japan, Nov. 16, 1977, 52/137569
Int. Cl.³ H03K *3/353*; H01L *29/06, 29/80*
U.S. Cl. 307—304 **2 Claims**



1. An electronic circuit for a timepiece, comprising:
a high impurity concentration semiconductor substrate, and a low impurity concentration expitaxially grown semiconductor layer on said substrate;
high frequency oscillator circuit means for generating a high frequency oscillating output signal, comprising a vertical junction field effect transistor formed in said low impurity concentration epitaxially grown semiconductor layer, a pair of lateral transistors formed in said low impurity concentration epitaxially grown semiconductor layer and connected for biasing said vertical junction field effect transistor, a quartz crystal vibrator connected to said vertical junction field effect transistor for being driven to oscillate, and a pair of frequency adjusting capacitors connected to said quartz crystal vibrator; and
frequency dividing circuit means for dividing the oscillating

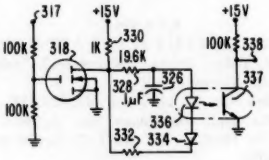
output signal from said oscillator circuit means for developing a low frequency timing signal, said dividing circuit means comprising at least one divider stage including a vertical junction field effect transistor formed in said low impurity concentration epitaxially grown semiconductor layer, the vertical junction field effect transistor of said oscillator circuit means having a gate space longer than the gate space of the vertical junction field effect transistor of the divider stage of said dividing circuit means for imparting a higher mutual conductance to said vertical junction field effect transistor comprising said oscillator circuit means than the mutual conductance of said vertical junction field effect transistor comprising the divider stage of said dividing circuit means.

4,278,900

FAIL-SAFE PULSE PROVIDING APPARATUS

Jayant K. Kapadia, Pleasant Hills, and Thomas C. Matty, North Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 15, 1979, Ser. No. 12,546
Int. Cl.³ H03K *3/42, 5/19*
U.S. Cl. 307—311 **6 Claims**



1. In fail-safe pulse providing apparatus responsive to an input signal comprising a plurality of time control pulses followed by a pulse gap, the combination of:

switch means coupled with the input signal for initiating a voltage pulse in response to one of said time control pulses or said pulse gap and terminating said voltage pulse in response to the other of said one time control pulse or said pulse gap,

a first impedance member,

energy storage means responsive to said voltage pulse and coupled with the first impedance member and the switch means for storing a predetermined amount of energy as determined by the duration of said voltage pulse,

a second impedance member,

a light emitting diode coupled with the storage means and the second impedance member for providing a desired photon output in accordance with the discharge of said predetermined amount of stored energy in response to said voltage pulse, and

photo-responsive switch means for providing an output pulse in accordance with said desired photon output.

4,278,901

PULSIVE COMPONENT DETECTING APPARATUS

Hiroyasu Kishi, Gunma, Japan, assignor to Sanyo Electric Co., Ltd., Osaka and Tokyo Sanyo Electric Co., Ltd., Gunma, both of, Japan

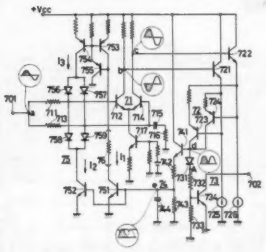
Filed Mar. 20, 1979, Ser. No. 22,342
Claims priority, application Japan, Jun. 9, 1978, 53-70603; Jun. 19, 1978, 53-75769; Jun. 19, 1978, 53-75770
Int. Cl.³ H03K *5/153*
U.S. Cl. 307—350 **28 Claims**

1. Apparatus for detecting a pulsive component randomly interspersed in an input signal having a substantially continuous noise component comprising:

amplifying means having an input for receiving said input signal and an output,

means connected to the output of said amplifying means for generating a control signal corresponding to the amplitude level of said continuous noise component of the input signal,

means connected to the input of said amplifying means and responsive to said control signal for controlling the amplitude of the input signal applied to said amplifying means to maintain a substantially predetermined amplitude level for



said continuous noise component at the output of said amplifying means, and

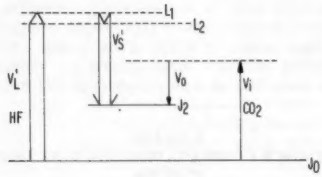
means responsive to the output of said amplifying means for detecting a pulsive component exceeding a predetermined level above said predetermined level of said continuous noise component.

4,278,902

TUNABLE 16-MICRON COHERENT SOURCE INCLUDING PARAHYDROGEN RAMAN TRANSITION AND METHOD

Michael M. Loy, Mount Kisco, and Peter P. Sorokin, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,588
Int. Cl.³ H03F *7/00*
U.S. Cl. 307—426 **20 Claims**



1. A source of coherent IR in the vicinity of 16 um comprising:

a parahydrogen cell (34);

a CO_2 laser (10);

a multi-line gas laser (20) emitting with wave number significantly below 14,400 $cm.^{-1}$; and

means for coupling emissions of said CO_2 and multi-line gas laser to said parahydrogen cell (**11, 12, 21, 30, 31, 32, 33**) and output means for passing 16 um emissions of said parahydrogen cell (**35**).

4,278,903
PHASE COMPARISON CIRCUIT

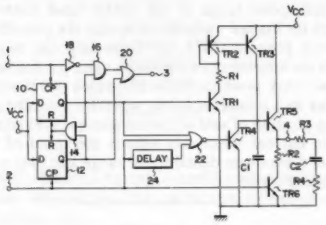
Kazuaki Ichinose, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 19, 1979, Ser. No. 31,399

Claims priority, application Japan, Apr. 28, 1978, 53-51987; Jan. 24, 1979, 54-6119

Int. Cl.³ H03K 5/26

U.S. Cl. 307—514 **22 Claims**



1. A phase comparison circuit comprising first signal generating means receiving first and second input signals and producing an output signal having a duration corresponding to a phase difference between said first and second input signals; second signal generating means for producing an output signal a predetermined time after the output signal of said first signal generating means is terminated, capacitor means, charging means connected to said capacitor means and adapted to be enabled by the output signal of said first signal generating means to cause said capacitor means to be charged, discharging means connected to said capacitor means and adapted to be enabled by said second signal generating means to discharge said capacitor means, a first transistor having its base connected to said capacitor means to produce from the emitter thereof an output signal corresponding to an amount of charge stored in said capacitor means, and switching means connected in series with a resistor between the emitter of said first transistor and a first reference power supply terminal to cause the emitter of said first transistor to be coupled to said first reference power supply terminal through said resistor.

4,278,904
ELECTROMAGNETIC DEVICES

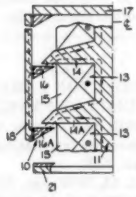
Alec H. Seilly, North Wembley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Apr. 10, 1980, Ser. No. 139,145

Claims priority, application United Kingdom, Apr. 11, 1979, 12797/79

Int. Cl.³ H02K 33/00

U.S. Cl. 310—27 **6 Claims**



1. An electromagnetic device comprising a first member of annular form, a second member located within said first member and having two or a multiple of two axially spaced helical ribs defined on its surface presented to the first member, windings carried by said second member and which when supplied with electric current causes adjacent ribs to assume opposite magnetic polarity, said first member when the windings are energised, moving axially relative to said second member to reduce the reluctance of magnetic circuits defined by the two members, characterised by a third member of annular form surrounding said first member, said third member being formed from magnetic material and defining a cylindrical surface presented to said first member, said first member comprising a helical element having an outer face presented to but spaced from the cylindrical surface of said third member and a face presented to a face of a rib of the second member, said helical element having the characteristic of a coiled spring, whereby when the windings are energised, deformation of the helical element can take place, thereby progressively increasing the force available at one end of the member.

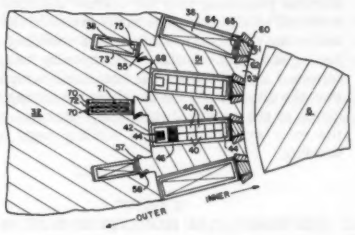
4,278,905
APPARATUS FOR SUPPORTING A STATOR WINDING IN A SUPERCONDUCTIVE GENERATOR

Madabushi V. K. Chari, Schenectady; Donald W. Jones, Burnt Hills, and Evangelos T. Laskaris, Schenectady, all of N.Y., assignors to Electric Power Research Institute, Palo Alto, Calif.

Continuation-in-part of Ser. No. 864,540, Dec. 27, 1977, abandoned. This application Feb. 16, 1979, Ser. No. 12,718

Int. Cl.³ H02K 9/00

U.S. Cl. 310—52 **5 Claims**



1. An apparatus for supporting a stator winding in a superconductive generator, said generator having a yoke and a rotor comprising:

(a) a plurality of integral stator bars positioned between the yoke and the rotor in a superconductive generator;

(b) a plurality of integral stator bars positioned within the yoke of the superconductive generator, said bars being for generating an electrical output current in combination with the stator bars located between the yoke and the rotor;

(c) a plurality of non-conductive supporting teeth interspaced between the stator bars located between the yoke and the rotor, said teeth being rigidly attached to the yoke of the generator; and

(d) a plurality of wedge members for engaging the supporting teeth and for rigidly securing the stator bars located between the yoke and the rotor during operation of the generator.

4,278,906
COOLING ARRANGEMENT FOR THE ROTOR OF AN ELECTRIC MACHINE

Dieter Kullmann, Langenzenn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,513

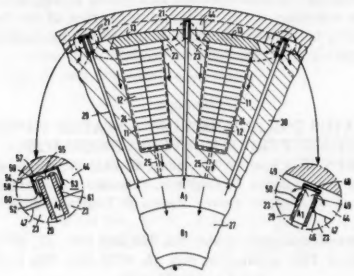
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830852

Int. Cl.³ H02K 7/14

U.S. Cl. 310—52 **9 Claims**

1. In an arrangement for cooling the rotor of an electric machine having a superconducting field winding which is

cooled by coolant flow from a co-rotating mixing chamber located near the axis of the rotor, through coolant connecting lines outside the winding parts, a coolant distribution system disposed at the outer circumference of the field winding, and cooling canals running through the winding parts of the field winding between the coolant distribution system and the mixing chamber so that, during operation, coolant flows through the cooling canals due to a self-pumping effect, the improvement comprising:



at least some of the coolant connecting lines having end sections projecting into the coolant distribution system, each end section being thermally insulated from the coolant in the distribution system by a shielding device and having at least one coolant outlet opening located a predetermined distance from the rotor axis which is greater than the distance of inlet openings connecting the cooling canals to the coolant distribution system, as measured to the rotor axis, through the winding parts of the field winding.

4,278,907

D.C. SUBFRACTIONAL HORSEPOWER MOTOR WITH FLUX SHUNT FOR VARIABLE RPM ADJUSTMENT

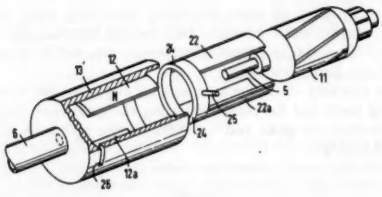
Hermann Landgraf, Heppenheim, and Juergen Wohlgemuth, Darmstadt, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 20, 1979, Ser. No. 59,295

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834099

Int. Cl.³ H02K *1/00, 23/40*

U.S. Cl. 310—191 **10 Claims**



1. A dental tool drive system comprising a d.c. subfractional horsepower motor with permanent-magnetic excitation and with rotor output means including an armature (**11**) for the drive of a tool rotatably seated in a dental hand instrument selectively over relatively high and relatively low dental speed ranges, said system further comprising a cylindrical motor housing (**13'**) having permanent magnets (**12, 12***a*) therein for the excitation of the armature (**11**) and arranged with poles lying diametrically opposite one another, said motor housing comprising a sleeve encircling the armature and forming a stationary return flux path and being of low retentivity material for this purpose, said sleeve having the permanent magnets (**12, 12***a*) secured thereto so as to provide for an air gap between the permanent magnets (**12, 12***a*) and the armature (**11**), a plurality of pole shoes (**22, 22***a*) of low retentivity magnetic material corresponding to the plurality of said permanent magnets (**12, 12***a*) and rotatably arranged concentrically thereto in the air gap between the armature (**11**) and permanent magnets; and manually operable dental speed range selector means coupled with the pole shoes (**22, 22***a*) and comprising an actuation element (**25**) extending through the motor housing to the exterior thereof for manual actuation for the selection of the dental speed range of the dental hand instrument, and arranged for manual switchover to shift the pole shoes from a first work position (FIG. **12**) increasing the magnetic flux through the armature to a maximum value for dental work into a second work position (FIG. **13**) which decreases the magnetic flux to a minimum value, whereby depending upon the working position of said actuation element (**25**) adjustment of armature current selectively adjusts the speed of the dental tool over a minimum dental speed range and over a maximum dental speed range.

4,278,908

HEATING OF DOSING CAPSULE

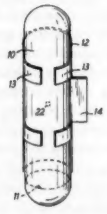
Basil Antonis, London, England, assignor to Thorn Electrical Industries Limited, London, England

Filed Mar. 21, 1979, Ser. No. 22,443

Claims priority, application United Kingdom, Mar. 31, 1978, 12748/78

Int. Cl.³ H01J *61/28*

U.S. Cl. 313—177 **9 Claims**



1. In a method of introducing a dosing material into a gas discharge lamp from a glass capsule mounted in a metallic support within the envelope of the lamp by using an electromagnetic field to heat the support and thereby open the capsule, the improvement which comprises constructing the metallic support as a sheet metal clip having an opening therethrough, fitting the clip closely about the capsule, and heating the sheet metal of the clip around the said opening by means of the electromagnetic field, thereby softening the glass and causing the softened glass to be forced through the opening by the pressure developed within the capsule.

4,278,909

MODIFIED CONDUCTOR ARRAY FOR PLASMA DISPLAY PANEL

Albert O. Piston, Catskill, and Thomas A. Sherk, West Hurley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 13, 1979, Ser. No. 57,531

Int. Cl.³ H01J *17/04, 61/06, 63/02*

U.S. Cl. 313—217 **10 Claims**

1. A gaseous discharge display device comprising in combination,

a pair of glass plates,

each of said glass plates having a conductor array formed thereon,

a dielectric coating over each of said conductor arrays,

spacer means comprising a plurality of spacer elements for providing and maintaining a uniform discharge gap between said glass plates,

said spacer means comprising a plurality of metallic spacer elements located at predetermined positions on one of said plates,

said spacer elements having a configuration adapted to fit between adjacent parallel conductors on said one of said glass plates, and

means for symmetrically modifying the physical parameters of said conductors adjacent said spacer elements to compensate for modification of the operating characteristics of said adjacent conductors resulting from the proximate location of said spacer elements.

4,278,910

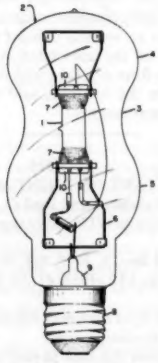
HIGH PRESSURE ARC DISCHARGE LAMP HAVING CONCAVE SHAPED OUTER JACKET

William M. Keeffe, Rockport, and David R. Brown, Beverly, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 6, 1979, Ser. No. 64,157

Int. Cl.³ H01J *17/16, 61/34*

U.S. Cl. 313—220 **1 Claim**



1. In a high pressure arc discharge lamp of the type comprising an elongated arc tube having electrodes at its ends and disposed substantially axially within a glass outer jacket, the improvement which comprises the portion of the outer jacket surrounding the arc tube having a concave shape longer than the internal length of the arc tube, the pressure in the arc tube during normal operation being greater than one atmosphere.

4,278,911

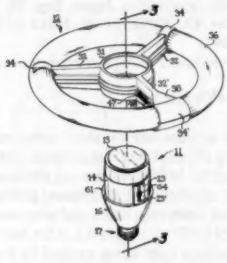
CIRCULAR FLUORESCENT LAMP UNIT

Rudolph Metoff, Mayfield Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 13, 1979, Ser. No. 47,985

Int. Cl.³ H01J *5/48, 5/50*

U.S. Cl. 313—318 **16 Claims**



1. A circular lamp unit comprising a central hub and a detachable circular lamp assembly, said hub comprising means for connection to a source of electrical power and a socket at the side of the hub, and said circular lamp assembly comprising a circular light bulb, a sleeve ring adapted to fit around said hub, and a plurality of spokes extending outwardly from said sleeve ring and supporting said circular light bulb, one of said spokes being provided with an electrical slide connector arranged to slide alternatively toward said hub and make contact with said socket, and away from said hub and break contact with said socket.

4,278,912

ELECTRIC DISCHARGE TUBE HAVING A GLASS-SEALED ELECTRIC LEADTHROUGH AND METHOD OF MANUFACTURING SUCH AN ELECTRIC LEADTHROUGH

Gerardus A. H. M. Vrijssen, and Johannes P. T. Franssen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1979, Ser. No. 50,005

Claims priority, application Netherlands, Jun. 24, 1978, 7806822

Int. Cl.³ H01J *5/50*

U.S. Cl. 313—331 **4 Claims**

1. An electric discharge tube comprising a glass envelope having an inner wall, an outer wall, and an electric leadthrough connecting these walls, said envelope having a first electrically conductive layer on the inner wall and a second electrically conductive layer on the outer wall, said leadthrough comprising a third electrically conductive layer, present on a wall of an aperture in the glass envelope and electrically connected to the first and second layers, and a glass plug hermetically sealing the aperture, said glass plug comprising hermetically sealing, thermally devitrified glass;

wherein the aperture has an axis which points in a direction from the outer to the inner wall, and the cross-section of the aperture, transverse to its axis, decreases in the inward direction.

4,278,913
PHOSPHOR AND LOW-VELOCITY ELECTRON EXCITED FLUORESCENT DISPLAY DEVICE UTILIZING THE SAME

Akiyasu Kagami, Ninomiya, and Yoshiyuki Mimura, Chigasaki, both of Japan, assignors to Kasei Optonix, Ltd. and Japan Electric Industry Development Assoc., both of Tokyo, Japan

Filed Sep. 20, 1979, Ser. No. 77,377
Claims priority, application Japan, Sep. 20, 1978, 53-115676
Int. Cl.[3] C09K *11/46;* **H01J** *63/04*
U.S. Cl. 313—495 **4 Claims**

1. A zinc oxide-based phosphor represented by the formula

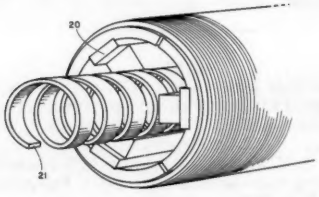
$$xM^{II}F_2.yM^{III}F_3.ZnO$$

wherein M^{II} is at least one divalent metal selected from the group consisting of beryllium, magnesium, calcium, strontium, barium, zinc and tin; M^{III} is at least one trivalent metal selected from the group consisting of aluminum, gallium, indium, thallium, yttrium and antimony; and x and y are numbers satisfying the conditions of $0.0001 \leqq x+y \leqq 0.1$, $0 \leqq x$ and $0 < y$; said phosphor emitting yellow light when excited by low velocity electrons.

4,278,914
DIAMOND SUPPORTED HELIX ASSEMBLY AND METHOD

Robert Harper, Concord, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 18, 1979, Ser. No. 86,213
Int. Cl.[3] H01J *25/34*
U.S. Cl. 315—3.5 **11 Claims**



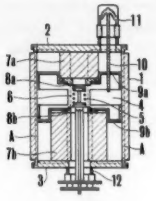
1. An improved structure for diamond supported helices comprising:
- a metal tubing having a plurality of grooves machined therein each adapted to receive in close fit diamond heat support material in strip arrangement;
- a like plurality of metal strips having diamond heat support material bonded thereto positioned in said grooves,
- a helix delay line having an outer diameter greater than the inner diameter of said positioned diamond heat support material,
- said tubing divided longitudinally into disconnected sections remote from said grooves and said sections positioned about said delay line with said diamond heat support material inner surfaces contacting the outer surface of said delay line; and
- wire means positioned about said disconnected tubing sections for exerting and maintaining a selected radially inward pressure against said disconnected sections;
- whereby the inner surfaces of said diamond heat support material are held in thermal contact against said helix delay line without having to be bonded thereto and said pressure may be varied initially with precision by adjusting said means for exerting pressure.

11. A method of positioning helix delay lines in electron interaction devices of the traveling wave type comprising:
- forming longitudinal grooves equally spaced about the interior of a cylindrical member having high thermal conductivity;
- dividing said member longitudinally into at least two disconnected sections;
- inserting in said grooves in close fit metallic strips having diamond support material bonded thereto;
- positioning said strips over a helically wound delay line having a plurality of spaced turns so as to obtain contact between said diamond support material and said delay line opposite each of said grooves; and p1 wrapping a wire of selected small diameter about said disconnected sections so that a contact of selected pressure is created between surface portions of said delay line and said diamond support material opposite said grooves.

4,278,915
MAGNETRONS

Toshio Ogura, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 17, 1979, Ser. No. 85,636
Claims priority, application Japan, Oct. 25, 1978, 53-145821[U]
Int. Cl.[3] H01J *25/50*
U.S. Cl. 315—39.71 **1 Claim**



1. In a magnetron of the type comprising a cylindrical anode electrode, a cathode electrode disposed along a central axis of said anode electrode, said anode electrode having a plurality of vanes secured to an inner surface of the cylinder and extending radially and inwardly toward said cathode electrode to define an interaction space between the cathode electrode and inner ends of said vanes, a pair of permanent magnets disposed at both ends of said interaction space, and pole pieces mounted on opposing surfaces of said permanent magnets for passing magnetic flux of said permanent magnets axially through said interaction space, the improvement wherein at least one pole piece mounted to the permanent magnet on the output side of the magnetron has an annular contact surface contacting the opposing surface of the associated permanent magnet and generally takes the form of a tube with one end closed and with a recess formed in the one end, said one end opposing the associated permanent magnet.

4,278,916
INSTANT-ON LIGHT SOURCE

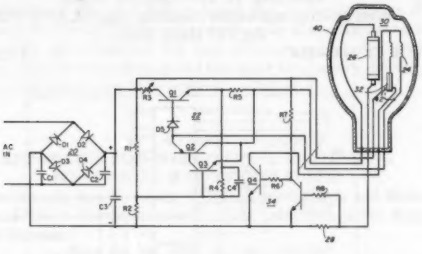
Robert J. Regan, Needham, and Paul O. Haugsjaa, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 3, 1979, Ser. No. 99,770
Int. Cl.[3] H05B *41/36, 41/46*
U.S. Cl. 315—92 **17 Claims**

1. An instant-on light source comprising:
- a high pressure discharge lamp;
- a first incandescent filament having a first terminal for receiving electrical power from a dc power source;
- current regulating means for delivering regulated current to said discharge lamp, said regulating means including an output coupled to said discharge lamp, a first input for receiving electrical power from said dc power source, and a second input coupled to a second terminal of said first filament for receiving electrical power through said first filament, said second input drawing sufficient current to

energize said first filament only during discharge lamp warm-up;

a second incandescent filament having a first terminal for receiving electrical power from said dc power source; and



filament control means, coupled in series with said second filament, for permitting current flow through said second filament when said filament control means senses an absence of discharge in said discharge lamp at a time when said discharge lamp is above a predetermined maximum starting temperature.

4,278,917

DRIVING CIRCUIT FOR FLUORESCENT DISPLAY DEVICE

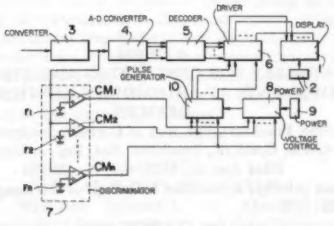
Youichi Kobori, Mobara, Japan, assignor to Futaba Denshi Kogyo K.K., Chiba, Japan

Filed Sep. 28, 1979, Ser. No. 80,036

Claims priority, application Japan, Oct. 9, 1978, 53-137888[U]

Int. Cl.³ H01J *23/34, 29/98*

U.S. Cl. 315—169.1 **3 Claims**



1. In a driving circuit for fluorescent display device which comprises anodes for forming a pattern display section, a phosphor layer deposited on said anodes, said phosphor layer deposited on at least one of said anodes being composed of mixed fluorescent materials each having different luminous color and threshold luminous voltage, a filamentary cathode for emitting thermions when energized and heated, whereby characters, figures and the like are displayed when thermions emitted from said cathode impinge said phosphor layer, the improvement which comprises:

a means for controlling an output voltage in response to an input to be displayed in said fluorescent display device;

a means for generating pulse signals having a peak value regulated by the output voltage of said voltage control means and having a pulse width or pulse-recurrence frequency regulated by the input to be displayed in said fluorescent display device; and

a means for driving said fluorescent display device in response to the output of said pulse generating means.

4,278,918

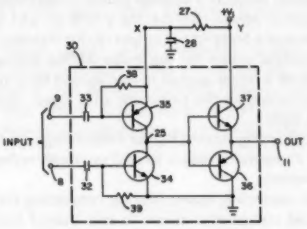
DISPLAY PANEL DRIVER CIRCUIT

Kenneth W. Bachofer, Elk River, Minn., assignor to Modern Controls, Inc., Elk River, Minn.

Filed Mar. 31, 1980, Ser. No. 135,657

Int. Cl.³ H05B *41/30*

U.S. Cl. 315—169.4 **6 Claims**



1. A circuit for voltage driving a plurality of capacitive conductor segments in a gas display panel, comprising:

(a) a first complementary transistor pair connected at an intermediate series junction point in series coupled arrangement between a voltage source and a ground return terminal, said pair having a common connection to their respective control elements;

(b) a second complementary transistor pair connected in series coupled arrangement between a voltage source and a ground return terminal, said pair having their respective common junction point connected to said common connection of said first pair's control elements;

(c) a pair of input terminals, each terminal respectively connected to a control element of one of said second complementary transistor pair; and

(d) an output terminal connected to the intermediate series junction point of said first complementary transistor pair.

4,278,919

TELEVISION VERTICAL DEFLECTION CIRCUIT UTILIZING COMPARATORS

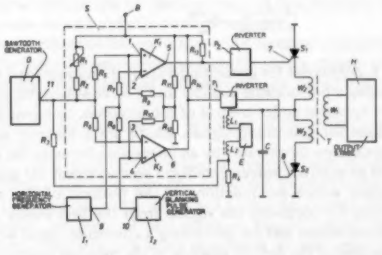
Rolf Hugo, and Wilfried Schiller, both of Hildesheim, Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Nov. 13, 1979, Ser. No. 93,865

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1978, 2850731

Int. Cl.³ H01J *29/72*

U.S. Cl. 315—393 **6 Claims**



1. In television equipment operative in vertical trace and retrace intervals occurring at a vertical deflection frequency and horizontal trace and retrace intervals occurring at a horizontal deflection frequency, said television equipment having means (G) for generating a sawtooth voltage at said vertical deflection frequency, means (I_1) for furnishing shaped horizon-

tal frequency pulses having slanted pulse tops, vertical deflection means (L_1, L_2), and means (S_1, S_2, W_2, W_3, C) for energizing said vertical deflection means, said energizing means comprising at least one controllable switch means (S_2) requiring application of a sequence of horizontal frequency control pulses having increasing pulse width during each of said vertical deflection intervals, apparatus for furnishing said sequence of horizontal frequency control pulses, comprising

comparator means (K_2) having a first (3) and a second (4) input and a comparator output (6) for furnishing comparator output pulses having pulse widths corresponding to the time a signal applied to said second input has an amplitude exceeding the amplitude of a signal applied to said first input;

first connecting means (R_6) for connecting said first input of said comparator means to said sawtooth voltage generating means;

second connecting means (R_8) for connecting said first input of said comparator means to said shaped horizontal frequency pulse furnishing means; and

means interconnected between said comparator output and said controllable switch means for applying said comparator output pulses to said controllable switch means to constitute said sequence of horizontal frequency control pulses.

4,278,920

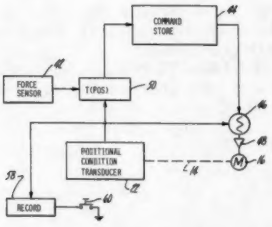
METHOD AND APPARATUS FOR GENERATING POSITION OR PATH CONTROL PROGRAMS USING FORCE FEEDBACK

Carl F. Ruoff, Jr., Dayton, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 708,521, Jul. 25, 1976, abandoned. This application Jul. 31, 1978, Ser. No. 929,490

Int. Cl.³ H02K *7/00*

U.S. Cl. 318—2 **16 Claims**



1. Apparatus for generating a control program for a machine having a positionable member and a drive system for the member operable under control of the program, comprising: a first sensor for generating signals which are a function of forces imposed on the member by an interaction between the member and an external instrumentality; a second sensor for generating signals which are functions of the position of the member; means for receiving the signals from the first sensor and the second sensor and for generating a command signal which is a function of the desired position of the member to decrease the forces exerted between the member and the external instrumentality; comparator means for receiving the command signal and the output of the second sensor and for generating an error signal which is a function of this input and is applied to the drive system to effect movement of the member; and means for recording at least certain of said signals representative of the position of the member.

4,278,921

CONSTANT SPEED ELECTRIC MOTOR

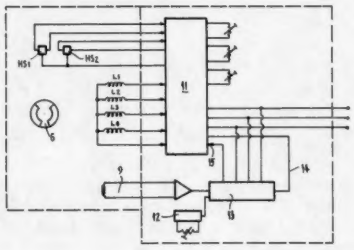
Reuben Medding, North Caulfield, and Peter D. Kay, Glen Waverley, both of Australia, assignors to Consolidated Electronic Industries Proprietary Limited, Thornbury, Australia

Filed Aug. 31, 1979, Ser. No. 71,483

Claims priority, application Australia, Aug. 31, 1978, PD5766

Int. Cl.³ H02P *6/02*

U.S. Cl. 318—254 **3 Claims**



1. A constant speed brushless D.C. motor of the permanent magnet outside rotor type with an internal stator wired in quadrature having a pair of Hall effect switches one of each mounted in proximity to one of a pair of opposite stator wirings to sense the direction and phase relationship of the field in the rotor, a coarse feedback loop sensing means for comparing the negative generated motor voltage and motor potential, an outer fine speed control loop superimposed over said coarse feedback loop, said outer loop including means for producing a group of integrated pulses representing the speed of the motor, second comparator means in said outer fine speed loop for comparing a separate group of integrated pulses having a constant frequency which is substantially exactly equated with a desired motor speed thereby achieving a frequency lock, said Hall effect switches operating under the influence of said comparator means to control power to said motor and thereby control its speed.

4,278,922

ASSEMBLY FOR GENERATING ADJUSTMENT MOVEMENTS AT AUTOMOBILE VENTILATION DEVICES

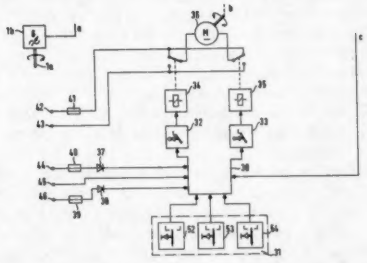
Karl Grebe, Frankfurt, Fed. Rep. of Germany, assignor to Rockwell-Golde, G.m.b.H., Frankfurt, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 28,931

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817297

Int. Cl.³ B60H *1/26*

U.S. Cl. 318—264 **7 Claims**



1. In combination an assembly generating adjustment movements on automobile ventilation devices driven by motor drive means, especially on roof openings closeable by a slideable or

pivoted lid comprising: a generator coupled to a component of the automobile which revolves during travelling and the rotational speed of which is directly proportional to the speed of travel, said generator generating a control signal to adjust said drive means for the ventilation device which is switched on according to the speed of travel, in the direction of closing the ventilation device at a higher speed and in the direction of opening at a lower speed; said switching on of the drive means is carried out optionally for two different ranges of travel speed, one for town driving and the other for country driving; said drive means can be selectively switched on.

4,278,923

APPARATUS FOR MAINTAINING A ROTATING MEMBER AT A CONSTANT SPEED

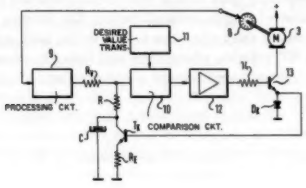
Peter Nowak, Am Weinberg 1, 7634 Kippenheim 2, and Reinhard Rieger, Bertholdstrasse 29, 7630 Lahr, both of Fed. Rep. of Germany

Filed Jul. 12, 1978, Ser. No. 924,207

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1977, 2731666

Int. Cl.³ H02P *5/46*

U.S. Cl. 318—302 **23 Claims**



1. In an assembly comprising a drive motor producing a drive force and a corresponding motor torque, a rotary member, transmission means for operatively connecting the motor and the rotary member and being of a nature to be liable to suffer from slip in the transmission of the drive force, and an electrical control circuit connected to said drive motor for controlling the drive motor; the improvement comprising compensation means responsive to said slip in the transmission of the drive force for applying to the control circuit a compensation signal proportional to a change in a parameter directly related to the motor torque, whereby to compensate for the slip suffered by the transmission means.

4,278,924

DIGITAL SERVO APPARATUS

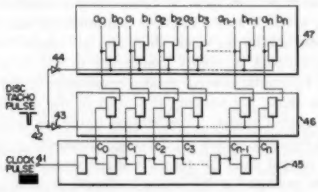
Masahiko Mawatari, Kawasaki, and Masaaki Tamura, Fujisawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 18, 1978, Ser. No. 943,645

Claims priority, application Japan, Sep. 21, 1977, 52-113864

Int. Cl.³ G11B *21/04*

U.S. Cl. 318—314 **18 Claims**



1. Digital servo apparatus for controlling a motor comprising:

a binary counter adapted to receive clock pulses and having a binary output with a count value based on the number of clock pulses received;

first memory circuit means connected to said binary counter for storing an output of said counter in response to a first latch pulse which is a vertical synchronizing signal of a television signal;

secondary memory circuit means connected to said binary counter for storing an output of said counter in response to a second latch pulse taken from the motor to be controlled;

data processing circuit means connected to said first and second memory circuit means for calculating an amount of control of said motor from the difference between the stored data of said first memory circuit means and the stored data of said second memory circuit means.

4,278,925

PHASE-LOCKED LOOP SPEED CONTROL SYSTEM USING PROGRAMMABLE COUNTER FOR FREQUENCY PULLING

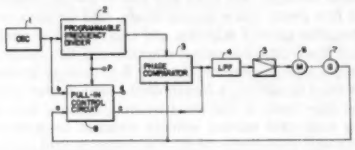
Hiroshi Minakuchi, Kadoma, Japan, assignor to Matsushita Electric Industrial Company, Kadoma, Japan

Filed May 31, 1979, Ser. No. 44,149

Claims priority, application Japan, Dec. 6, 1977, 52-146750

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—314 **7 Claims**



1. A phase-locked loop system for controlling the speed of an electrically driven moving element, comprising:

means for generating a train of pulses at a frequency related to the speed of said moving element;

an oscillator for generating clock pulses;

a programmable frequency divider having a clock input terminal connected to said oscillator and a program control input terminal receptive of a program control signal for generating an output signal at a frequency which is an integral submultiple of the frequency of said oscillator in response to said program control signal;

a phase comparator having a first input terminal connected to the output of said programmable frequency divider and a second input terminal receptive of said speed related pulses;

a lowpass filter connected to the output of said phase comparator;

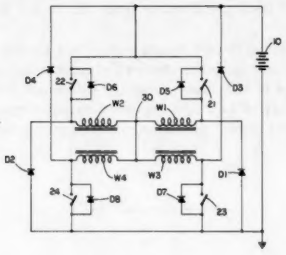
a pull-in control circuit comprising a programmable counter having a clock input terminal connected to said oscillator for counting said clock pulses and a program control input terminal receptive of said program control signal, said pull-in control circuit being responsive to said speed related pulses for generating an output signal such that the output signal of said lowpass filter varies as a function of the frequency of said speed related pulses; and

means for combining said output signal of said pull-in control circuit with the output signal from said phase comparator and applying a combined output signal through said lowpass filter to said moving element.

4,278,926
STEP MOTOR CIRCUIT

Peter G. Bartlett, Davenport, Iowa, assignor to Automation Systems, Inc., Eldridge, Iowa

Filed May 23, 1979, Ser. No. 41,719
Int. Cl.[3] G05B 19/40
U.S. Cl. 318—696 7 Claims



1. A step motor circuit comprising: (a) a power source, having a first voltage terminal and a second, more positive, voltage terminal;

(b) first, second, third, and fourth switch means;

(c) first, second, third, and fourth step motor windings, each of said windings having one end connecting to the other said windings; the other ends of said first and second windings being switchably connected to said second voltage terminal through said first and second switch means respectively; the other ends of said third and fourth windings being switchably connected to said first voltage terminal through said third and fourth switch means;

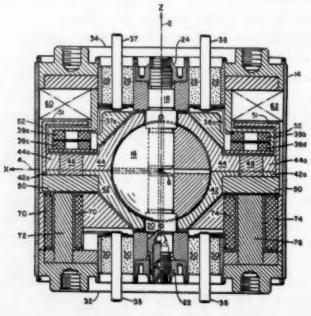
(d) a first diode and a second diode, said diodes connecting the other ends of said first and said second windings with said first voltage terminal respectively; the anodes of said diodes being connected to said first voltage terminal;

(e) a third diode and a fourth diode, said diodes connecting the other ends of said third winding and said fourth winding with said second voltage terminal respectively; the cathodes said diodes being connected to said second voltage terminal.

4,278,927
AXIAL GAP PERMANENT MAGNET MOTOR

Lester R. Grohe, East Weymouth, Mass., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Mar. 5, 1979, Ser. No. 17,352
Int. Cl.[3] H02P 7/36
U.S. Cl. 318—721 4 Claims



1. An axial gap, permanent magnet motor comprising:

A. a stator including two adjacent sets of series connected coils wound in quadrature, each set of coils being disposed in a substantially annular configuration about a spin reference axis wherein the axis of each coil is substantially parallel to said spin reference axis,

B. a rotor adapted for rotation about a spin axis and including a set of permanent magnets disposed in a substantially annular configuration about said spin axis, said annular configuration of magents having substantially the same mean radius as said annular configuration of coils, and wherein the magnetic moment of each of said magnets is substantially parallel to said spin axis, and wherein the magnetic moments of adjacent magnets in said set are oppositely directed,

C. means for positioning said rotor with respect to said stator whereby said annular configuration of magnets is adjacent to said annular configuration of coils so that magnetic flux from said magnets is coupled to said coils,

D. means for maintaining said spin reference axis and said spin axis substantially coaxial,

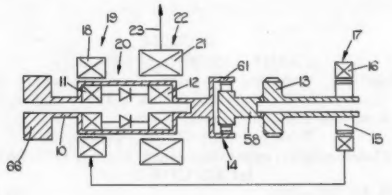
E. return means connected to said rotor for establishing a magnetic flux return path therein, said return path completing a circuitous path for magnetic flux passing through said coils, and

F. means for exciting said sets of coils including servo means for detecting back emf in said sets of coils and for generating control signals related thereto for driving alternating currents in the respective sets of coils, said currents having a 90° relative phase shift and being in-phase with the detected back emf for the respective sets of coils.

4,278,928
ELECTRIC GENERATOR ARRANGEMENT

Trevor J. Griffiths; Raymond Sharpe, both of Bradford, and Peter Hunt, Shipley, all of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Sep. 7, 1977, Ser. No. 831,105
Claims priority, application United Kingdom, Sep. 8, 1976, 37141/76; Apr. 14, 1977, 15617/77
Int. Cl.[3] H02P 15/00; F16H 47/04
U.S. Cl. 322—29 29 Claims

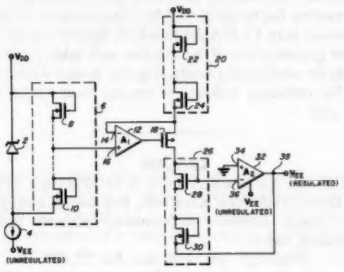


1. A generator arrangement comprising an electric generator having a stator and a rotor, a continuously variable ratio drive means having an input shaft and an output shaft, said output shaft being drivingly connected to the rotor of said generator, hydraulic control means, responsive to the speed of said output shaft, for varying the ratio of the speeds of said input and output shafts, a centrifugal liquid-air separator including an impeller, means for drivingly connecting said impeller to said output shaft for rotation at the speed of said output shaft, a first passage for delivering hydraulic fluid to said separator from which liquid is separated and pressurized by rotation of said impeller, and means for supplying directly to said control means the liquid separated and pressurized by said impeller.

4,278,929
REGULATED NEGATIVE VOLTAGE SUPPLY

Robert D. Lee, and Richard W. Ulmer, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 21, 1979, Ser. No. 96,274
Int. Cl.[3] G05F *1/40*
U.S. Cl. 323—311 10 Claims

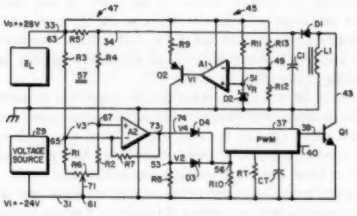


1. An MOS regulated negative power supply, comprising:
first means, coupled to an unregulated supply voltage, for generating a positive reference voltage;
second means coupled to said first means for converting said reference voltage to a current;
third means coupled to said second means for receiving said current and generating therefrom a first voltage; and
feedback means coupled to said third means for referencing said first voltage to ground to maintain said first voltage negative and for regulating the negative voltage.

4,278,930
CURRENT SENSING CIRCUIT FOR POWER SUPPLY WITH SERIES CONTROL TRANSISTOR

Robert G. Rogers, Los Altos, Calif., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Sep. 27, 1979, Ser. No. 79,650
Int. Cl.[3] G05F *1/58*
U.S. Cl. 323—285 6 Claims

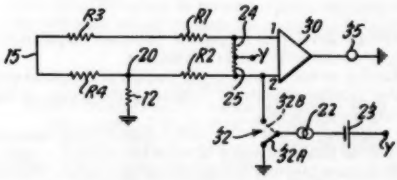


1. In a voltage converter responsive to an input voltage at a pair of input terminals for producing an output voltage at a pair of output terminals across which a load impedance is to be connected, apparatus for producing an indication of load current outputted from a first output terminal comprising:
passive resistive bridge circuit means having a pair of nodes electrically connected between the first output terminal and an other one of the terminals,
said resistive bridge circuit means comprising:
a first resistor in one of the arms of said bridge means that is adjacent the first output terminal, said first resistor being a current sensing resistor that passes the load current therethrough to said first output terminal;
a potentiometer having one and other sides thereof and having a moveable contact electrically connected to said other one of the terminals;
a first resistive voltage divider means including second and third series connected resistors having one ends thereof electrically connected together at a first tap point and having other ends electrically connected to the one side of said potentiometer and to one side of said first resistor that is connected to said first terminal, respectively;
a second resistive voltage divider means including fourth and fifth series connected resistors having one ends electrically connected together at a second tap point and having other ends electrically connected to the other side of said potentiometer and to the other side of said first resistor, respectively;
the resistance of said potentiometer being varied for adjusting the magnitude of difference voltage developed between said voltage divider tap points, which difference voltage is an indication of the load current passed by the voltage converter, to be a prescribed value for a given load current in said first resistor.

4,278,931
LOCATION OF CONTACT FAULTS ON ELECTRICALLY CONDUCTIVE CABLES

Ernest E. J. Huggins, Seaford, England, assignor to The Post Office, London, England

Filed Jan. 26, 1979, Ser. No. 6,647
Claims priority, application United Kingdom, Jan. 27, 1978, 3456/78
Int. Cl.[3] G01R *31/08*
U.S. Cl. 324—52 13 Claims



1. A method of locating contact faults on electrically conductive cable pairs comprising looping the pair at one end thereof, connecting two resistors across the other end of the pair, connecting a constant current source to the junction of the two resistors and measuring the current flowing in each resistor, the ratio of said currents being indicative of the position of the fault.

4,278,932
A.C. BRIDGES

David A. G. Tait, 34 Mount St., Dorking, Surrey, England

Filed Jul. 6, 1979, Ser. No. 55,171
Claims priority, application United Kingdom, Jul. 11, 1978, 29445/78
Int. Cl.[3] G01R *27/00, 27/26, 27/02*
U.S. Cl. 324—57 R 13 Claims

1. An a.c. bridge comprising
a first arm including an element having a standard resistance;
a second arm including an element having a standard reactance, one end of said second arm being connected to one end of said first arm;
a third arm having terminals for connection to an unknown impedance, one end of said third arm being connected to the other end of said first arm;
a fourth arm comprising a resistive circuit including first and second variable resistance elements, said fourth arm being connected between the other ends of said second and third arms, said second variable resistance having a movable tap;
an a.c. voltage source;
means for connecting one terminal of said source to the

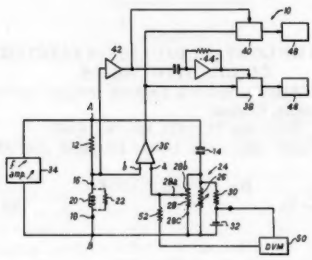
junction between said first and second arms and the other terminal of said source to the junction between said third and fourth arms;

first and second phase-sensitive rectifier circuits each having an input terminal and a reference signal terminal;

means for coupling an unbalance signal from the junction between said first and third arms and said movable tap of said second variable resistance to the input of each of said rectifier circuits;

circuit means for supplying a first a.c. reference signal having a predetermined phase relation with the voltage developed across the unknown impedance to said reference input terminal of said first rectifier circuit to synchronize said rectifier circuit;

circuit means for supplying a second a.c. reference signal having a second predetermined phase relation with the



voltage developed across the unknown impedance to synchronize said rectifier circuit; and

indicating means coupled to the outputs of the phase-sensitive rectifier circuits for indicating the senses of their output signal levels;

the magnitude of said first resistive element being adjustable until the phase difference between the unbalance signal at the input of said first rectifier circuit and the first reference signal supplied thereto is at a predetermined value,

said movable tap on said second variable resistance being subsequently adjustable until the phase difference between the signal at the input of said second rectifier circuit and said second reference signal supplied thereto is at a predetermined value, without affecting the phase relation between the signal at the input of the first rectifier circuit and the first a.c. reference signal to balance the bridge.

4,278,933

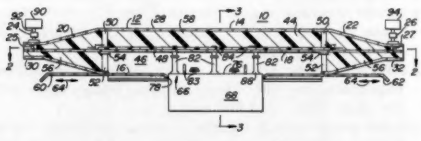
MEANS AND METHOD FOR DETERMINING SUSCEPTIBILITY TO RADIATED ENERGY

Robert T. Klopach, State College, and Rickey E. Hartman, Lansdale, both of Pa., assignors to American Electronic Laboratories, Inc., Colmar, Pa.

Filed Jun. 18, 1979, Ser. No. 49,395

Int. Cl.³ G01R *27/04*

U.S. Cl. 324—58 R **23 Claims**



1. A testing means for determining susceptibility to radiated energy and leakage of energy from a device having a conductive surface comprising a stripline unit for transmitting radiant energy in the principal transverse electromagnetic mode including a first conductive ground plane element, a second conductive ground plane element spaced from and parallel to the first ground plane element, and a plane center conductor element positioned intermediate and parallel to the first and second ground plane elements, the stripline unit having first and second end sections providing energy coupling means, and an intermediate section between the end sections for transmitting energy therealong, a portion of the first ground plane element of the intermediate section of the stripline unit providing an opening for being closed by a conductive surface of a device which is to be tested and which effectively provides a portion of ground plane of the stripline unit, said opening being adjustable for electrically contacting the device which is to be treated for reducing leakage of energy transmitted by the stripline unit.

4,278,934

ELECTRODE ASSEMBLY FOR A MOISTURE METER

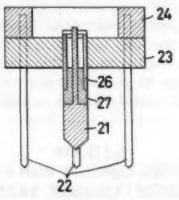
Susumu Ihara; Yoshinobu Kashiuchi, and Isamu Jinguji, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 26, 1979, Ser. No. 33,408

Claims priority, application Japan, Apr. 27, 1978, 53-58598[U]; Apr. 27, 1978, 53-58599[U]

Int. Cl.³ G01R *27/26*

U.S. Cl. 324—61 P **2 Claims**



1. An electrode assembly for an electrostatic moisture meter of the electrostatic capacity type for determining the moisture content of powdery or granular material, said assembly comprising:

a primary insulator;

at least one secondary insulator mounted on the base of at least one high-voltage electrode in the form of a rod, said at least one secondary insulator and at least one high-voltage electrode mounted in said primary insulator and extending outwardly therefrom;

a plurality of ground electrodes in the form of rods, said ground electrodes being mounted in said primary insulator at locations spaced around said at least one high-voltage electrode, and said ground electrodes being longer than said at least one high-voltage electrode; and

an electrostatic shield mounted on said at least one secondary insulator and extending through said primary insulator for preventing an appreciable increase in electrostatic capacitance between said at least one high-voltage electrode and said ground electrode.

4,278,935

ELECTRODES FOR MOISTURE METER

Susumu Ihara, and Kizashi Nakamura, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 20, 1979, Ser. No. 50,219

Claims priority, application Japan, Jul. 6, 1978, 53-93679[U]; Jul. 6, 1978, 53-93680[U]; Dec. 8, 1978, 53-169542[U]

Int. Cl.³ G01R *27/26*

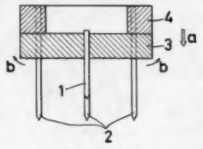
U.S. Cl. 324—61 P **9 Claims**

1. An electrode assembly for an electrostatic moisture meter of the electrostatic capacity type for determining the moisture content of powdery or granular material, said assembly comprising:

an insulator;

at least one high-tension electrode in the form of a rod mounted in said insulator and extending outwardly therefrom; and

a plurality of earth electrodes in the form of rods, said earth



electrodes being mounted in said insulator at locations spaced around said high-tension electrode, said earth electrodes extending outwardly from said insulator in directions parallel to said high-tension electrode, and said earth electrodes being longer than said high-tension electrode.

4,278,936

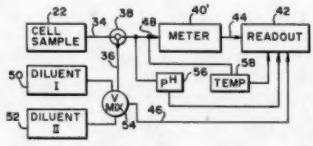
BIOLOGICAL CELL PARAMETER CHANGE TEST METHOD AND APPARATUS

Ian B. Shine, Lexington, Ky., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Feb. 5, 1980, Ser. No. 118,727

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—71 CP **24 Claims**



1. A method for testing cells comprising the steps of:

a. forming a hypotonic mixture with at least one portion of a cell sample and a first solution having a specific osmolality, the cells of said sample each having an original parameter value state;

b. causing the cells to reside in said mixture for at least a short known duration, during which the cells attain a change of at least one parameter value as compared to their original parameter value state, the amount of said change depending upon the osmolality of the mixture and the innate and acquired properties of each cell;

c. measuring said attained cell parameter change; and

d. employing said attained cell parameter change to define data which is capable of being compared with cell parameter change data representative of a known health or physiological condition.

4,278,937

CIRCUIT ARRANGEMENT FOR MONITORING THE PHASE SEQUENCE OF A ROTARY FIELD

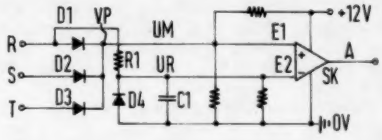
Josef Immler, Puchheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 14,139

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808085

Int. Cl.³ G01R *25/00*

U.S. Cl. 324—86 **7 Claims**



1. A circuit arrangement for monitoring the phase sequence of a rotary field, comprising:

a voltage comparator for receiving first half waves from two-phases and the opposite half wave of a third phase, inverted, and responsive thereto to form a measuring voltage;

means for providing an inverted half wave of the third phase as the reference voltage to said comparator; and

means for adjusting said voltage comparator to provide an error signal indicating an erroneous phase sequence when the reference voltage exceeds the measuring voltage.

4,278,938

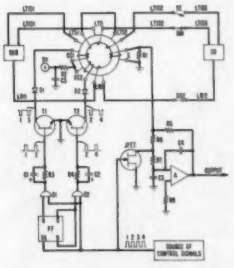
ELECTROMAGNETIC ARRANGEMENT FOR MEASURING ELECTRICAL CURRENT

Jeffrey C. Morriss, Lisle, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 27, 1979, Ser. No. 61,261

Int. Cl.³ G01R *19/00, 33/00;* H04M *3/22*

U.S. Cl. 324—117 R **11 Claims**



1. An arrangement for measuring an electrical line current flowing in a line circuit comprising:

(A) a single magnetic path having magnetic characteristics such that the slope of the hysteresis characteristic changes substantially as the magnetizing intensity H changes between a zero amount of H and a finite amount of H;

(B) means electromagnetically coupling the line circuit to the path so that a particular amplitude and polarity of line current causes in the path a corresponding finite amount and polarity of line H;

(C) means for supplying a succession of control signals;

(D) a control circuit controlled by each control signal so that a corresponding pulse of particular amplitude and

duration and polarity of electrical control current flows in the control circuit;

(E) means electromagnetically coupling the control circuit to the path so that successive control current pulses cause in the path successive corresponding changes of control H where the successive changes of control H are of essentially equal finite amounts of the opposite polarity;

(F) the successive changes of control H being such as to cause the magnetic induction B in the path to undergo successive corresponding changes of opposite polarity where the amounts of the changes of B are determined by the combined amount and polarity of line H and control H;

(G) means controlled by each control signal and by the corresponding change of B to produce a corresponding voltage pulse the amplitude and duration and polarity of which are a measure of the amount and polarity of line H in the path;

(H) means controlled by a plurality of successive voltage pulses

(1) to perform cumulative algebraic integration of the successive voltage pulses

(2) and to provide a changing output voltage the amplitude and polarity of which are a measure of the cumulative integration;

(I) and, means controlled by the output voltage to cause in the path an amount of feedback H where

(1) the amount of feedback H is according to the amplitude of the output voltage

(2) and the polarity of the feedback H is opposite to the polarity of any line H;

(J) whereby

(1) the amplitude of the output voltage becomes essentially constant when in the path the amount of feedback H essentially equals the amount of line H

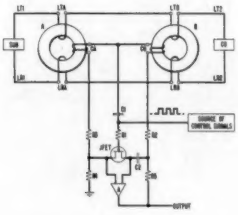
(2) and the amplitude and polarity of the constant output voltage are a measure of the amplitude and polarity of the line current.

4,278,939

ELECTROMAGNETIC ARRANGEMENT FOR MEASURING ELECTRICAL CURRENT

James L. Henry, Whippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 27, 1979, Ser. No. 61,463
Int. Cl.[3] G01R *33/00;* H04M *3/22*
U.S. Cl. 324—117 R **10 Claims**



1. An arrangement for measuring an electrical line current flowing in a line circuit comprising:

(A) two separate magnetic paths having essentially matching magnetic characteristics such that the slope of the hysteresis characteristic changes substantially as the magnetizing intensity H changes between a zero amount of H and a finite amount of H;

(B) means electromagnetically coupling the line circuit to the two paths so that a particular amplitude and polarity of line current causes in the two paths corresponding essentially equal finite amounts of the same polarity of line H;

(C) means for supplying a succession of control signals;

(D) a control circuit controlled by each control signal so that a corresponding pulse of particular amplitude and duration and polarity of control current flows in the control circuit;

(E) means electromagnetically coupling the control circuit to the two paths so that each control current pulse causes in the two paths coresponding changes of control H where the changes of control H are of essentially equal finite amounts of the opposite polarity;

(F) each change of control H in the two paths being such as to cause the magnetic inductions B in the two paths to undergo corresponding changes of opposite polarity where the amounts and polarities of the changes of B are determined by the combined amount and polarity of line H and control H in the two paths;

(G) means including the control circuit coupling means controlled by each control signal and by the corresponding changes of B in the two paths to produce a corresponding voltage pulse the amplitude and duration and polarity of which are a measure of any algebraic difference between the amounts of the corresponding changes of B in the two paths;

(H) means controlled by a plurality of successive voltage pulses

(1) to perform cumulative algebraic integration of the successive voltage pulses

(2) and to provide a changing output voltage the amplitude and polarity of which are a measure of the cumulative integration;

(I) and, means including the control circuit coupling means controlled by the output voltage to cause in the two paths essentially equal amounts of feedback H where

(1) the amount of feedback H is according to the amplitude of the output voltage

(2) and the polarity of the feedback H is opposite to the polarity of any line H;

(J) whereby

(1) the amplitude of the output voltage becomes essentially constant when in each of the two paths the amount of feedback H essentially equals the amount of line H

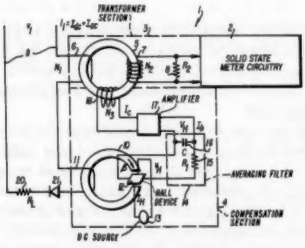
(2) and the amplitude and polarity of the constant output voltage are a measure of the amplitude and polarity of the line current.

4,278,940

MEANS FOR AUTOMATICALLY COMPENSATING DC MAGNETIZATION IN A TRANSFORMER

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Somersworth, N.H.

Filed Apr. 25, 1979, Ser. No. 33,078
Int. Cl.[3] G01R *1/20, 11/24*
U.S. Cl. 324—127 **3 Claims**



1. In an electronic watthour meter of the type having a transformer including an input winding for receiving alternating current from a power signal generating source, an output winding connected to meter circuitry for monitoring the alter-

nating current flowing through the input winding, and a core which is potentially saturable through DC magnetization caused by an undersired DC component, of potentially differing values, which is deliberately superimposed on the AC component of the alternating current applied to the input winding of said transformer, apparatus for compensating for DC magnetization of said core comprising:

(a) a compensating winding on the core of said transformer;

(b) sensing means connected to sense the current flowing through the input winding of said transformer and generating an alternating output signal having a magnitude proportional to the sensed current and which includes the AC and DC components of sensed current; and

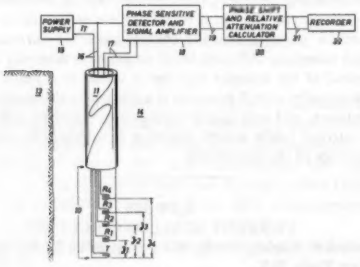
(c) an averaging filter, including an amplifier, for filtering the AC component out of the alternating output signal over at least one cycle of the sensed current, to thereby provide, from said amplifier to said compensating winding of said transformer, a compensating current signal having a magnitude proportional to that value of the DC component of the sensed current, said compensating current signal effecting linear operation of said transformer by compensating for the DC magnetization of said core caused by the undesired DC component flowing in the input winding of said transformer to thereby effect maximum coupling of the AC component of the alternating current from the input winding to the output winding of said transformer to derive an input signal to the meter circuitry having a magnitude proportional to the magnitude of the alternating current flowing in the input winding of said transformer.

4,278,941

HIGH FREQUENCY INDUCTION LOG FOR DETERMINING RESISTIVITY AND DIELECTRIC CONSTANT OF THE EARTH

Robert Freedman, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 30, 1978, Ser. No. 955,673
Int. Cl.³ G01V *3/28*
U.S. Cl. 324—341 **6 Claims**



5. An apparatus for induction logging a borehole to obtain the resistivity and dielectric constant of the formation surrounding the borehole, said apparatus comprising:

a logging tool adapted for lowering into the borehole and having three spaced coils disposed thereon; one coil being a transmitter coil and the remaining two coils being receiver coils;

a power source having a frequency between 20 and 60 megahertz, said power source being coupled to said transmitter coil;

a phase sensitive detector and amplifier network coupled to the said two receiver coils, said phase sensitive detector and amplifier network measuring at both receiver coils the voltage that is in-phase with respect to the power source and the voltage that is out-of-phase with respect to the power source;

computer means disposed to utilize the in-phase and out-of-phase signals to compute the phase shift in the voltages between the receiver coils and the relative attenuation of the voltage amplitudes;

a recording mechanism to record as a function of wireline depth the phase shift and relative attenuation computed by the said circuit means; and,

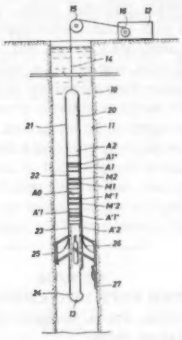
a nomogram for obtaining the resistivity and relative dielectric constant of the formation from the phase shift and relative attenuation.

4,278,942

SEAL AND PRESSURE BALANCE SYSTEM FOR AN ELECTRODE-TYPE LOGGING SONDE

Jean-Loup Bonnet, Chatenay Malabry, and Claude Fierfort, Palaiseau, both of France, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Nov. 24, 1978, Ser. No. 963,629
Int. Cl.³ G01V *3/18*
U.S. Cl. 324—347 **11 Claims**



1. A logging tool adapted for the investigation of earth formations traversed by a borehole, comprising:

a mandrel adapted to be suspended in a borehole;

a plurality of annular members including a first group of electrically-conductive annular members and a second group of electrically-nonconductive annular members coaxially arranged and axially stacked around said mandrel with the ends of said annular members in abutting contact with one another, and with said electrically-nonconductive annular members respectively serving as insulated spacer members and said electrically-conductive annular members respectively disposed between selected ones of said insulated spacer members to serve as spatially-arranged electrode members;

means, including said annular members and sealing means cooperatively arranged between adjacent ones of said stacked annular members, for collectively defining a fluid-tight space between the interior of said stacked annular members and at least the portion of the exterior of said mandrel thereadjacent;

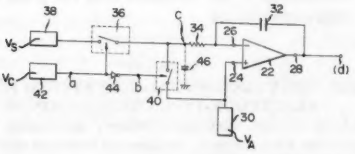
resilient means supported on said mandrel and cooperatively arranged and coupled to said stacked annular members for imposing a compressive load thereon; and

means supported on said tool in fluid communication with said fluid-tight space and the exterior of said stacked annular members for continuously maintaining a predetermined relationship between the pressure of an electrically-nonconductive fluid contained in said fluid-tight space and the pressure existing at the exterior of said stacked annular members.

4,278,943
INTEGRATION CIRCUIT

Eiji Masuda; Chikara Sato, both of Kawasaki, and Yasoji Suzuki, Ayase, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 29, 1978, Ser. No. 920,343
Claims priority, application Japan, Jun. 29, 1977, 52-76622
Int. Cl.[3] H03K 5/00; G06G 7/186
U.S. Cl. 328—127 16 Claims

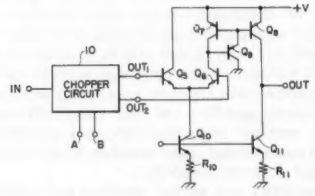


1. An integration method using an integration circuit having operational amplifying means with first and second input terminals and an output terminal and receiving at said first input terminal a reference potential signal, capacitor means connected between said second input terminal and said output terminal of said amplifying means, and resistive means having first and second ends, said resistive means connected at said first end to said second input terminal of said amplifying means and said resistive means selectively connected at said second end to a voltage signal to be integrated, comprising a step of directly and non-resistively applying a signal with substantially the same potential as the potential of said reference potential signal to said second end of said resistive means, and at the same time stopping the application of said voltage signal to be integrated to said second end of the resistive means.

4,278,944
CHOPPER TYPE SWITCHING CIRCUIT

Kohji Ishida, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 2, 1979, Ser. No. 54,118
Claims priority, application Japan, Jun. 30, 1978, 53-80011
Int. Cl.[3] H03D 1/18
U.S. Cl. 329—103 8 Claims

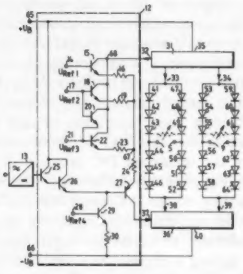


8. A chopper type switching circuit comprising; first and second transmission paths adapted to transmit a predetermined input signal to respective output terminals from a first input terminal; first and second switching elements connected respectively between the mid points of said first and second transmission paths and a reference voltage line; a group of resistors series connected between said output terminals; and third and fourth switching elements connected respectively between the series connection points of said group of resistors and said reference voltage line, said first, second, third and fourth switching elements being controlled to be rendered conductive, whereby said input signal is not transmitted to said output terminals, and hence said switching circuit operates as a muting circuit.

4,278,945
CIRCUIT FOR THE GENERATION OF A CONTROL VARIABLE FOR THE CONTROL OF THE TRANSFER CONSTANT OF ELECTRONICALLY ACTUABLE AMPLIFYING AND ATTENUATING MEMBERS

Ernst Schröder, Hanover, and Jürgen Wermuth, Stederdorf, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,949
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842945
Int. Cl.[3] H03G 3/00; H03H 7/24; H03B 1/64
U.S. Cl. 330—278 5 Claims



1. A circuit for the generation of a control variable for the control of the transfer constant of electronically controllable amplifying or attenuating members in dependence upon a steady differentiable function, for an arrangement for the automatic dynamics-compression or -expansion comprising a rectifier having an input and an output the input of which is supplied by a signal which is provided for dynamics-compression or -expansion and a transfer element determining the control characteristic, having an input and an output, the input of which is coupled to the output of the rectifier and the output of which is coupled to the electronically controllable amplifying or attenuating members, the transfer element comprises at least two transistors, the bases of which are subjected to different reference voltages, and the emitter-collector current paths of which comprise different series resistances whereby one input terminal of the transfer element is wired to a junction of the current paths which junction is adjacent to the emitters of the transistors, and one output terminal is wired to a junction of the current paths which junction is adjacent to one of the collectors of the transistors.

4,278,946
CURRENT SCALING CIRCUITRY

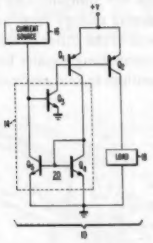
Leonard A. Kaplan, Fords, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,785
Int. Cl.[3] H03F 3/04, 1/34
U.S. Cl. 330—288 5 Claims

1. In an amplifier having input and output terminals, said amplifier comprising first and second transistors of like conductivity type having respective emitter, base and collector electrodes, wherein said second transistor is connected to conduct an output current at said output terminal, said amplifier further comprising improved feedback means connected between the collector and base electrodes of said first transistor for conditioning said first transistor to conduct a current substantially proportional to a current applied at said input terminal, said feedback means comprising:

a current mirror amplifier having master and slave paths, said master path being connected to conduct current at the collector electrode of said first transistor, said slave path

being connected to substantially conduct a current applied at said input terminal, the current in said slave path being substantially proportional to the current in said master path; and



buffer means responsive to the difference between said input current and said current in said slave path of said current mirror amplifier for providing respective base currents of said first and second transistors.

4,278,947

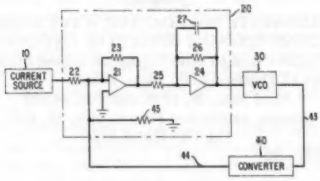
PRECISION FREQUENCY SOURCE USING INTEGRATED CIRCUIT ELEMENTS

Edward H. Nicollian, Murray Hill; Harold Seidel, Warren, and George E. Smith, Murray Hill, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 940,398, Sep. 8, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 76,313

Int. Cl.³ H03L *7/00*

U.S. Cl. 331—1 R **1 Claim**



1. An oscillator circuit (FIG. **1**) including a controlled local oscillator (**30**), a converter (**40**) for developing a signal proportional to the frequency of said controlled local oscillator (**30**), a reference signal source (**10**), and a comparator (**20**) jointly responsive to said converter (**40**) and to said source (**10**) for driving said controlled local oscillator (**30**), characterized in that

said converter (**40**) is a metered charge-coupled device (FIG. **2**)

comprising:

an underlying p-type substrate (**50**) having first and secnd independent n-positive regions (**51,55**) embedded therein and a p-type implant (**52**) located between said first and second regions and lying directly adjacent to said first region (**51**) only,

a first insulating layer (**56**) deposited atop said p-type substrate (**50**) including said embedded first (**51**) and second (**55**) regions and said p-type implant (**52**),

a silicon layer (**57**) deposited atop said first insulating layer (**56**) and extending from the inner edge of said first region (**51**) and above said p-type implant (**52**) extending toward but not reaching said second region (**55**),

a second insulating layer (**58**) surrounding said silicon layer (**57**), and

a metallized layer (**59**) extending from above said silicon layer (**57**) to the inner edge of said second region (**52**),

conductive electrodes (**61, 62, 64, 65**) being connected to each of said first (**51**) and second (**55**) regions and to each of said silicon (**57**) and metallized (**59**) layers whereby under the control of selected sequences of potentials applied to the several electrodes measured packets of electrical charges can be transferred between said first (**51**) and second (**52**) regions at a rate proportional to the frequency of the output of said local oscillator.

4,278,948

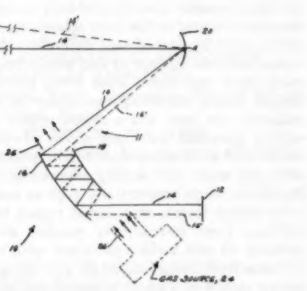
AUTOPOINTING LASER SYSTEM

Viktor Evtuhov, Pacific Palisades, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 716,307, Aug. 20, 1976, abandoned. This application Aug. 25, 1978, Ser. No. 937,016

Int. Cl.² H01S *3/081*

U.S. Cl. 331—94.5 C **6 Claims**



1. An autopointing laser system for use in the tracking and/or detection of a reflective object comprising a first reflective surface forming one end of an optical resonator, a pair of second reflective paraboloidal surfaces juxtaposed to one another and forming a multi-reflective path therebetween, said pair of second reflective surfaces being in optical alignment with said first reflective surface, said first reflective surface and said pair of second reflective surfaces constituting a retro-reflector, a third reflective surface being in optical alignment with said pair of second reflective surfaces, said pair of second reflective surfaces being disposed along respective paraboloidal surfaces having a common axis and a common focus substantially at the center of said third reflective surface and a lasing medium located between said pair of second reflective surfaces whereby when said reflective object is situated in optical alignment with said third reflective surface, said reflective object acts as the other end of said resonator and radiant energy produced within said laser medium is reflected between said first reflective surface, said pair of second reflective surfaces, said third reflective surface and said reflective object thereby allowing a lasing action to take place within said lasing medium as long as said reflective object remains in optical alignment with said third reflective surface.

4,278,949
SEMICONDUCTOR LASER STRUCTURE AND MANUFACTURE

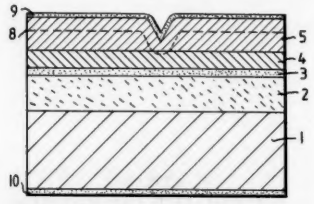
Peter Marschall, Neu-Ulm; Ewald Schlosser, Ulm, and Claus Wölk, Erbach, all of Fed. Rep. of Germany, assignors to LICENTIA Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 41,171

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822146

Int. Cl.³ H01S *3/19*

U.S. Cl. 331—94.5 H **15 Claims**



1. In a semiconductor laser composed of a sequence of layers forming a heterostructure diode and including a substantially homogeneously doped layer defining a laser active zone having a laser radiation exit face perpendicular to the layers, two respectively differently doped semiconductor layers disposed at respectively opposite sides of the active zone, and means for constricting the current flowing in the forward direction of the diode to a narrow, strip-shaped region in the laser active zone, the improvement wherein said laser comprises a monocrystalline layer located in the layer sequence to be spaced from said active zone by one of said differently doped semiconductor layers, with the surface of said monocrystalline layer directed away from said active zone being provided with a trough-shaped recess extending essentially perpendicularly to said radiation exit face, and a doped region extending from said surface provided with said recess toward but not into said active zone and formed by diffusion from said surface provided with said recess of a doping material which gives said doped region the same conductivity type as said one of said differently doped layers, said doped region being delimited by a diffusion front substantially parallel, and corresponding in contour, to said surface provided with said recess, and said diffusion front being located for providing a localized semiconductor region of a single conductivity type in the area below said recess and between said recess and said active zone, and semiconductive regions of respectively opposite conductivity types separated by said diffusion front in areas adjacent the localized region.

4,278,950
ELECTRO-DYNAMIC LASER WITH ACOUSTIC ABSORBING ELECTRODE

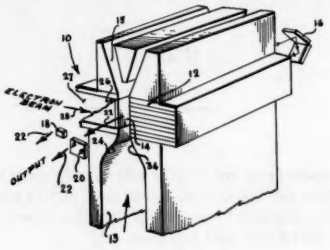
David R. Ahouse, Andover; Jack D. Daugherty, Winchester; Sheldon L. Glickler, Framingham; Paul F. Kellen, Medford; George W. Sutton; David Korff, both of Lexington, and Marvel J. Yoder, Andover, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 6, 1979, Ser. No. 46,073

Int. Cl.³ H01S *3/08, 3/22*

U.S. Cl. 331—94.5 G **10 Claims**

1. In a high pressure, high power, continuous wave electrodynamic laser having a resonant cavity with a longitudinal axis and a pair of side walls, a gaseous laser medium flowing through said resonant cavity in a direction substantially transverse to said longitudinal axis of said resonant cavity and between said side walls, a pair of oppositely disposed sustainer electrodes in the form of an anode and a cathode positioned to contact said gaseous laser medium, said anode and cathode having a fundamental anode to cathode frequency, an electron beam entering said resonant cavity through one of said side walls substantially transverse to both said longitudinal axis of said resonant cavity and the direction of said flow of said gaseous laser medium for pumping said gaseous laser medium, and means for extracting energy from said laser, the improvement being in the form of the other of said side walls, said other of said side walls comprising means being coincidental with said gaseous laser medium in said resonant cavity for absorbing



acoustic disturbances which arise from a linear instability which occurs within said resonant cavity, said acoustic disturbance absorbent means having a surface of material porous to said gaseous laser medium and a backing material juxtaposed said surface material capable of broad band acoustic absorption, said backing material having an absorbtion peak centered around said fundamental anode to cathode frequency whereby output flux modulations within said resonant cavity are substantially reduced.

4,278,951
SOLID-STATE MILLIMETER WAVE SOURCE COMPRISING A DIRECTIVE ANTENNA

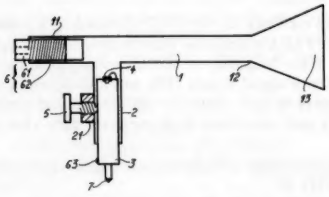
Gérard Cachier, and Jacques Espaignol, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 28, 1979, Ser. No. 24,503

Claims priority, application France, Mar. 31, 1978, 78 09568

Int. Cl.³ H03B *5/36*

U.S. Cl. 331—96 **4 Claims**

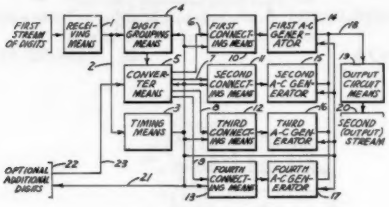


1. A source of millimeter waves comprising a cylindrical waveguide one end of which is provided with a movable piston and the other end is provided with a directive antenna, and, connected to the section between the ends, a cylindrical waveguide branch, a solid-state active component integrated in a module having a metal support and an electrode, the latter being capable of radiating the millimeter waves emitted by the active component, said module being supported by a sub-assembly slidable in said branch, said sub-assembly having a central part supporting said solid state component that is insulated from said waveguide branch, and a voltage supply inserted between said central part and said waveguide branch, the adjustment of the piston and the sub-assembly being usable for acting on the power and the frequency of said source.

4,278,952
QUANTIZED ANGLE MODULATOR

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec H3H 1T1, and Sidney T. Fisher, 53 Morrison Ave., Mt. Royal, Montreal, Quebec H3R 1K3, both of Canada

Filed Jul. 23, 1980, Ser. No. 171,534
Int. Cl.³ H03C *3/02*
U.S. Cl. 332—1 **4 Claims**



1. A quantized angle modulator for receiving a first stream of digits of substantially the same duration, which converts said first stream of digits to a second stream of alternating-current digits each of substantially the same peak amplitude and each of substantially the same duration which may be different from said duration of the digits of said first stream, said second stream of alternating current digits transmitting the information of said first stream of digits, which comprises:

receiving means for said first stream of digits, and

grouping means connected to said receiving means for grouping said first stream of digits into groups or digital words of substantially equal duration, each said group containing an integral number of said digits of said first stream;

a plurality of alternating-current generators, each of which generates a wave of substantially the same peak amplitude with a single substantially constant frequency, the frequencies of the waves from any two generators being materially different, the number of said generators being at least as great as the greatest possible number of said groups of digits with materially different information content;

digital converter means which receives said groups of digits from said grouping means, and causes one of said generators to be connected through connecting means to a single output circuit for all said generators after the receipt of each of said groups, a different one of said generators being connected for each of said groups with materially different information content according to a predetermined coding plan; and

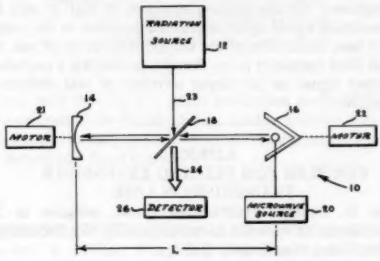
timing means which produces a wave with predetermined fixed frequency and phase relationship to the timing of said first stream of digits, said wave controlling the timing of said grouping means and said converter means and the frequencies and phases of said alternating-current generators.

4,278,953
NEAR MILLIMETER WAVELENGTH MODULATOR AND TUNABLE OSCILLATOR

Raymond Y. Chiao, Berkeley, Calif.; Harold R. Fetterman, Lexington, Mass., and Howard R. Schlossberg, Annandale, Va., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 23, 1979, Ser. No. 23,371
Int. Cl.³ H01S *3/10*
U.S. Cl. 332—7.51 **10 Claims**

1. A near millimeter wavelength modulator which is operable with an incoming beam of monochromatic radiation of preselected near millimeter wavelength comprising means for reflecting said beam of radiation, means in optical alignment with said reflecting means for variably reflecting said beam of radiation, said reflecting means and said variable reflecting means being spaced a preselected distance apart, said distance between said reflecting means and said variable reflecting means being such that a resonant condition is achieved with respect to said incoming beam of radiation, means operably connected to said variable reflecting means for varying the reflectivity thereof in order to generate a beam of radiation at a wavelength at which a non-resonant condition is achieved

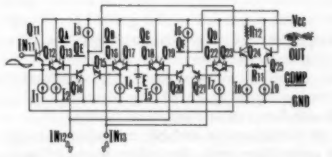


between said reflecting means and said variable reflecting means and means in optical alignment with said reflecting means and said variable reflecting means for receiving said incoming beam of preselected monochromatic radiation, directing said incoming beam of radiation between said reflecting means and said variable reflecting means and for directing said generated beam of radiation at said wavelength at which said non-resonant condition is achieved out of said modulator.

4,278,954
SUPPRESSED CARRIER MODULATOR USING DIFFERENTIAL AMPLIFIER

Hitoshi Fujisaki, Kodaira, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1979, Ser. No. 76,609
Claims priority, application Japan, Sep. 22, 1978, 53-116014
Int. Cl.³ H03C *1/42, 1/54*
U.S. Cl. 332—9 T **3 Claims**



1. A modulation system comprising;

first, second, third and fourth transistor pairs, each emitter coupled;

fifth and sixth transistor pairs, each emitter coupled;

a differential amplifier;

means for connected base electrodes of the transistors of said fifth transistor pair to respective emitter electrodes of said first and second transistor pairs;

means for connecting base electrodes of the transistors of the sixth transistor pair to respective emitter electrodes of said third and fourth transistor pairs;

means for connecting emitter electrodes of said fifth and sixth transistor pairs to a pair of input terminals of said differential amplifier, respectively;

means for applying a clamped modulation signal to a base electrode of a first transistor of said first transistor pair and to a base electrode of a second transistor of said fourth transistor pair;

means for applying a signal to be modulated to the base electrodes of respective second transistors of said first and third transistor pairs;

means for applying direct current voltage to a base electrode of the second transistor of said second transistor pair and to a base electrode of the first transistor of said third transistor pair; and

means for applying a signal to be modulated to respective base electrodes of first transistors of said second and fourth transistor pairs, the last mentioned signal to be modulated having a phase opposite to that of said first mentioned signal to be modulated supplied to the respective base electrodes of the second transistors of said first and third transistor pairs, thereby producing a modulated output signal on an output terminal of said differential amplifier.

4,278,955

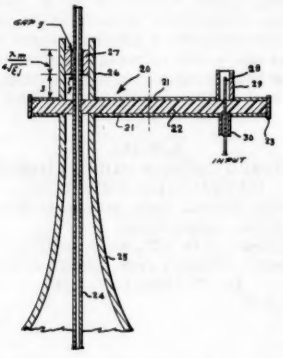
COUPLER FOR FEEDING EXTENSIBLE TRANSMISSION LINE

Clarence D. Lunden, FederalWay, Wash., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 22, 1980, Ser. No. 123,612

Int. Cl.³ H01P *5/08*

U.S. Cl. 333—33 **8 Claims**



1. A coupler for coupling a fixed r.f. signal source to a sliding transmission line comprising:

a planar elliptical cavity of electrically conductive material,

input means inputting an r.f. signal at a point connecting with one focus of said elliptical cavity,

an r.f. transmission line slidably extending through an aperture coinciding with the other focus of said elliptical cavity, the distance between ellipse foci being one half wavelength less than the length of the ellipse's major axis.

4,278,956

HF-ATTENUATOR

Georg Spinner, Feldkirchen-Westerham, and Leo Treczka, Munich, both of Fed. Rep. of Germany, assignors to Spinner GmbH Elektrotechnische Fabrik, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 46,634

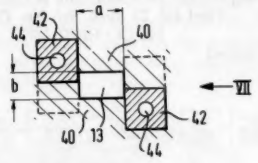
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2826081

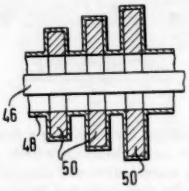
Int. Cl.³ H01P *1/22*

U.S. Cl. 333—81 A **32 Claims**

1. An HF attenuating member for a hollow waveguide, wherein the waveguide includes an elongate body having a longitudinal opening therethrough defined by an inner wall of the body;

resistance material disposed over the length of the body and at the inner wall, the resistance material being in the form of at least one body of constant cross-sectional dimensions, and the resistance material being shaped for increasing the proportion of the inner wall having absorbent





properties in the direction of wave propagation and being shaped such that the energy absorption of the resistance material per unit of body length is substantially constant.

4,278,957

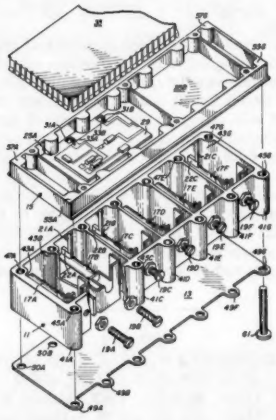
UHF FILTER ASSEMBLY

Terrence M. Starai, Bensenville; John H. Champlin, Jr., Hoffman Estates, and Randall J. Johnson, Bloomingdale, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 16, 1979, Ser. No. 58,059

Int. Cl.³ H01P *1/201, 7/00*

U.S. Cl. 333—202 **7 Claims**



1. A filter assembly for UHF or microwave frequency range comprising:

a bottom cover plate,

a top cover plate, and

a unitary cast multicell frame disposed between the bottom and the top cover plate, having a resonating rod in each of the cells that has been cast as an integral part of the unitary cast multicell frame, and wherein selected ones of the resonating rods have taps which have been cast as parts of

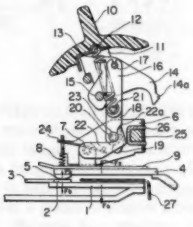
the unitary cast multicell frame, and wherein selected ones of the resonating rods have taps which have been cast as parts of the unitary cast multicell frame.

4,278,958

ELECTROMAGNETICALLY OPERATED MULTI-POLE CIRCUIT BREAKER

Kiyoshi Kandatsu, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jul. 5, 1979, Ser. No. 54,744
Claims priority, application Japan, Jul. 5, 1978, 53/81599
Int. Cl.³ H01H *75/00, 77/00, 83/00*
U.S. Cl. 335—16 **6 Claims**



1. In a circuit breaker having stationary contactors provided respectively for all of the poles thereof; movable contactors provided respectively for all of the poles in correspondence to said stationary contactors; stationary contacts provided respectively on the end portions of said stationary contactors; and movable contacts provided respectively on the end portions of said movable contactors, said movable contactors being movable from said stationary contactors by electromagnetic force to open respective circuits before said circuit breaker is opened by an overcurrent tripping device when a large current such as short-circuit current flows, the improvement comprising holders adapted to hold said movable contactors of all of the poles mounted on a common rotatable insulating rod (**25**), one of said holders (**6**) holding one of said poles having latch means (**22**) rotatable around a first rod **7** provided on said holder; a second rod (**20**) normally engaged by said latch means, and guide slots (**19**) in said one holder for guiding said second rod, wherein said second rod is movable in said guide slots when disengaged by said latch means, and an engaging spring (**24**) operating to engage said latch means with said second rod until a rotational moment acting on said latch due to a repulsive electromagnetic force generated in any one of the poles or the sum of repulsive electromagnetic forces generated in all of the poles reaches a predetermined value, whereupon said one holder rotates with said guide slots moving relative to said second rod, and said movable contactors of all of the poles are simultaneously separated from said stationary contactors to open the respective circuits with the aid of said insulating rod and said holders.

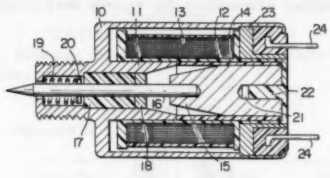
4,278,959

CURRENT-STROKE PROPORTIONAL TYPE SOLENOID VALVE

Torazo Nishimiya, Mito, and Masamitsu Okumura, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 4, 1979, Ser. No. 72,462
Claims priority, application Japan, Sep. 4, 1978, 53-107606
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—262 **7 Claims**

1. A current-stroke proportional type solenoid valve having a movable plunger disposed around the inner peripheral wall of a bobbin with a coil therearound, a stator core disposed face to face with the movable plunger and forming the magnetic circuit, a bias spring for always biasing the movable plunger in one direction , and the stroke of the movable plunger being determined by magnitude of the current flowing through the coil, wherein said output rod is axially supported by a first lubricant resin bearing and said movable plunger is axially supported by a second lubricant resin bearing, wherein said



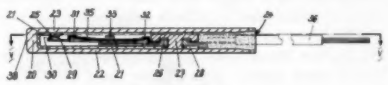
second resin bearing is a guide projection made of lubricant resin secured to the bobbin, being slidably inserted into a guide hole formed in the portion of said movable plunger not having the output rod fixed thereto.

4,278,960

TEMPERATURE CONTROLLED BIMETAL SWITCH

Manfred K. Müller, Pforzheim, Fed. Rep. of Germany, and Tomoyoshi Uchiya, Misato, Japan, assignors to Limitor AG, Zurich, Switzerland and Uchiya Thermostat Co., Saitama, Japan

Filed Jul. 11, 1979, Ser. No. 56,508
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1978, 2831198
Int. Cl.³ H01H *37/54*
U.S. Cl. 337—365 **9 Claims**



1. A temperature-controlled bimetal switch comprising an electrically insulated housing, a contact spring located within said housing, a curved bimetal snap plate in displacing contact with said contact spring, said housing being a flat structure having an upper wall and a lower wall closely spaced apart, said housing being formed of one of a transparent or translucent rigid plastics material permeable to radiant heat, said contact spring located between said upper and lower walls and being elongated and having a first end and a second end, said contact spring being secured within said housing at the first end thereof between said upper and lower walls, a fixed contact secured to said housing, said contact spring having a movable contact secured thereon adjacent the second end thereof for movement into and out of contact with said fixed contact, said bimetal snap plate being located between said spring and said upper wall so that radiant heat from the exterior of said housing passes through said upper wall and impinges directly on said bimetal snap plate, and holding means for loosely securing said snap plate to said contact spring so that said snap plate is held loosely on said contact spring while a major portion of the coextensive areas of said plate and spring are maintained out of contact.

4,278,961

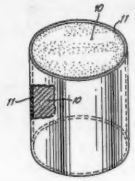
INSULATING COATING FOR SURGE ARRESTER VALVE ELEMENT

James E. Schroeder, Greenfield, and John F. Rasmussen, Franklin, both of Wis., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Continuation of Ser. No. 786,223, Apr. 11, 1977, abandoned.
This application Apr. 21, 1978, Ser. No. 898,621
Int. Cl.³ H01C *7/10*
U.S. Cl. 338—21 **3 Claims**

1. A valve element of a surge arrestor for an alternating

current power circuit, said valve element including non-linear resistive particles tightly held together in intimate contact within a ceramic matrix, said valve element having opposite end surfaces defining an axis therebetween, an outer axially-extending surface intermediate the opposite ones of said end



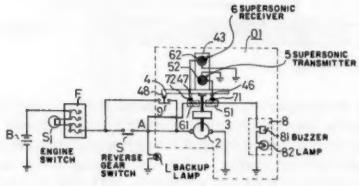
surfaces, said valve element being characterized by an electrically insulating coating intimately adhered to the outer axially extending surface of said valve element, said coating comprising a thermoset, anhydride cured, Bisphenol-A epoxy resin material.

4,278,962

AUTOMATIC ALARM SYSTEM FOR DETECTING OBSTACLES BEHIND A BACKING VEHICLE

Pin-Houn Lin, Taipei, Taiwan, assignor to Reino International Corporation, Taipei, Taiwan

Filed Nov. 14, 1978, Ser. No. 960,641
Int. Cl.[3] G08G *1/00, 1/16*
U.S. Cl. 340—34 **8 Claims**



1. An automatic alarm system for detecting vehicles behind a backing vehicle, comprising:

a casing having a generally cylindrical form with an opening therein, said casing being mountable on the rear end of the vehicle such that said opening faces rearwardly,

a revolving disc mounted within said casing,

a motor mounted within said casing,

a reduction gear assembly interconnecting said motor and said disc whereby said motor rotates said disc,

a printed circuit plate fixed within said casing under said revolving disc,

a supersonic transmitting member installed on said revolving disc,

a supersonic receiving member installed on said revolving disc,

said transmitting and receiving members being simultaneously alignable with said opening, and being electrically connected to a printed circuit on said printed circuit plate at least when said transmitting and receiving members are aligned with said opening, so that said transmitting member emits a signal which is deflected off adjacent obstacles and detected by said receiving member, and

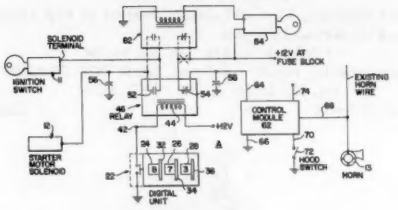
an alarm means connected in series with said circuit on said printed circuit plate so that deflected signals detected by said receiving member actuate said alarm means to alert a driver of the vehicle.

4,278,963

AUTOMOTIVE ANTI-THEFT SYSTEM

Luther Allen, 15806 Biltmore Ave., Cleveland, Ohio 44128

Filed Dec. 4, 1978, Ser. No. 965,845
Int. Cl.[3] B60R *25/04, 25/10*
U.S. Cl. 340—64 **1 Claim**



1. An automotive anti-theft system comprised of: a combination unit inside the passenger compartment comprised of a series of digital switches having a digital display and thumb wheels for manually changing said digital display having a large number of possible settings, only one of which will cause an associated electrical switch to close; a relay unit having a coil, normally open contacts and normally closed contacts, said relay unit connected to said combination unit such that said relay coil is energized when said combination unit switch is closed, said normally open contact being inserted in the lead between an automotive starter motor solenoid and the solenoid terminal on an automotive ignition switch; a control module having an electrical sensing lead connected through said normally closed contacts of said relay to a positive voltage point at an automotive fuse block and an output line which will supply power to an associated alarm device after a selected delay when said sensing line detects a drop in the positive supply voltage at said fuse block; a second concealed relay unit having a coil, normally open contacts and normally closed contacts; and a concealed key switch supplying power to said second relay coil in one position and interrupting power to said second relay coil in a second position; said second relay normally opened contacts connected in parallel to said first relay unit normally open contacts such that said second relay normally open contacts will complete the connection between said automotive starter motor solenoid and said solenoid terminal on said automotive ignition switch; said second relay unit nromally closed contacts electrically connected in series with said first relay unit normally closed contacts such that said control module electrical sensing lead will be isolated from said positive voltage point at said automotive fuse block when said second relay unit normally closed contacts are opened.

4,278,964

SEISMIC PLAYBACK SYSTEM

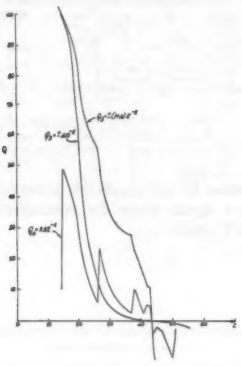
James R. Vanderford, Darien, Conn., assignor to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 153,077, Jun. 14, 1971, abandoned. This application May 29, 1974, Ser. No. 474,280
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 DA **4 Claims**

1. A system for providing an analog output signal representative of an input signal, where said input signal is represented in digital word form, said word being represented in digital signal form by the general algebraic form $Q_1 = \pm AG^{-E}$ wherein Q_1 corresponds to the amplitude of the analog output signal, A corresponds to the mantissa, G represents the exponent, and wherein said word is represented by at least one digit representing A, comprising means for providing a signal corresponding to at least one digit representing A, means connected to the A signal means for providing said output signal, and means connected to the A signal means and to the output signal means and receiving the digital signals corresponding to E for

affecting the output signal when E changes value so as to minimize distortion in the output signal resulting from a change in the input signal, said distortion minimizing means controls the output signal means to provide the analog output signal in accordance with the following equations:

$$Q_6 = \pm(1+A)2^{-E4}$$



when the exponent E has a value of 4 or less, where Q_6 corresponds to the amplitude of the analog output signal and E_4 corresponds to the Exponent E, and

$$Q_7 = \pm A2^{-E5}$$

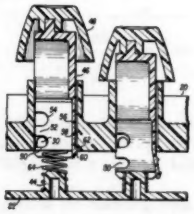
when the exponent E has a value of 5, where Q_7 corresponds to the amplitude of the analog output signal and E_5 corresponds to the exponent E.

4,278,965

PHOTO-OPTICAL KEYBOARD HAVING N-KEY ROLLOVER

Edward I. Nelson, Sunrise; Harry B. Mueller, Hollywood Hills, and John E. Lane, Pompano, all of Fla., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sep. 14, 1979, Ser. No. 75,396
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 P **16 Claims**



1. A photo-optical keyboard with N-key rollover comprising:

a keyboard housing having a matrix of rows and columns of apertures for keys, a light channel for each row passing between the apertures of each row; and a light channel for each column passing between the apertures of each column; and

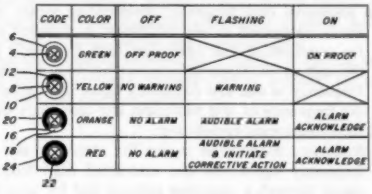
multiple keys each shaped to said apertures, each said key having first passages for allowing light to pass through said column and row light channels in the undepressed position, one or more projections causing an interruption of light in said row and light channels in the partially depressed position, second passages for allowing light to pass through said column and row light channels in the substantially depressed position.

4,278,966

VISUAL SIGNALING SYSTEM

Frank J. Hemsher, Venetia, Pa., assignor to Control Technology, Inc., McMurray, Pa.

Filed Feb. 9, 1979, Ser. No. 10,701
Int. Cl.³ G08B *5/36*
U.S. Cl. 340—366 R **9 Claims**



1. A visual signaling system comprising at least two light sources,

graphic indicator means operatively associated with said light sources for identifying said light sources, said indicator means including bands surrounding said light sources,

said indicator means being substantially continuously and simultaneously visible, and

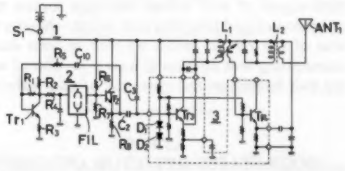
said indicator means having code means for identifying the particular light source with which it is associated, said code means including shading of said bands to an extent corresponding to the specific light source with which it is associated, whereby said indicator means will permit one to distinguish one of said light sources from another of said light sources.

4,278,967

WIRELESS DETECTION AND WARNING SYSTEM

Fumitaka Tanahashi, 29-23, Kounan 3-chome, Kounan-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Oct. 9, 1979, Ser. No. 82,584
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—539 **1 Claim**



1. A wireless warning and detection system comprising at least one sensor type transmitting unit, a receiving unit, and at least one portable transmitting unit;

said at least one sensor type transmitting unit comprising:

a sensor element for producing a sensing signal in response to the detection of an operation to be detected by said sensor;

a low frequency oscillation means operatively connected to said sensor element for producing a low frequency signal in response to said sensing signal;

a modulation means operatively connected to said low frequency oscillation means for multiplying and modulating said low frequency signal to produce a high frequency signal;

a high frequency transmitting means operatively con-

nected to said modulation means for transmitting said high frequency signal through a transmitting antenna;

said at least one portable transmitting unit comprising:

a switch means for producing a control signal;

an additional low frequency oscillation means operatively connected to said switching means for producing an additional low frequency signal in response to said control signal;

an additional modulation means operatively connected to said additional low frequency oscillation means for multiplying and modulating said additional low frequency signal into an additional high frequency signal;

an additional high frequency transmitting means operatively connected to said additional modulation means for transmitting said additional high frequency signal through an additional transmitting antenna, wherein the frequency of said low frequency signal is different than the frequency of said additional low frequency signal;

said receiving means comprising:

a frequency modulation means for receiving said high frequency signal and said additional high frequency signal through a receiving antenna and for amplifying said signals selectively to intermediate and additional intermediate frequency signals;

an intermediate frequency amplifying means operatively connected to said frequency modulation means for amplifying said intermediate and said additional intermediate frequency signals;

a detection means operatively connected to said intermediate frequency amplifying means for providing a signal having the same frequency as that of said low frequency signal and for providing a signal having the same frequency as that of said additional low frequency signal;

a low frequency amplifying means operatively connected to said detection means for amplifying said signal and said additional signal from said detection means;

first and second selection circuit means operatively connected to said low frequency amplifying means, said first selection means providing a warning in response to the detection of said signal having the same frequency as that of said low frequency oscillation means and said second selection means providing an inhibit signal upon the detection of a signal having the same frequency as that of said additional low frequency oscillation means;

wherein said second selection means is operatively connected to said first selection means and wherein said inhibit signal of said second selection means inhibits the operation of said first selection means whereby the operation of the switch means on said at least one portable transmitting unit disables at least a portion of said receiving unit to prevent the operation of said warning means.

4,278,968

DOOR STATUS DETECTOR APPARATUS

Coleman C. Arnett, P.O. Box 1472, Lewisville, Tex. 75067; James W. Godfrey, 4613 NW. 61st, Oklahoma City, Okla. 73122, and Mark R. Miller, P.O. Box 1375, Lewisville, Tex. 75067

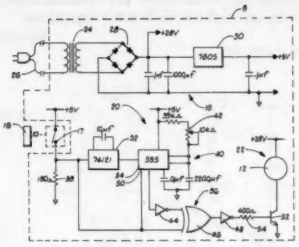
Filed Nov. 13, 1979, Ser. No. 93,731
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—545 **14 Claims**

1. A door status detector apparatus comprising:

a proximity switch responsive to the opening and closing of a door;

a timer having a trigger input electrically associated with said proximity switch for triggering, at the output of said timer, a pulse having a predetermined duration when said proximity switch responds to the opening of the door,

means responsive to said proximity switch and said timer for determining the concurrent condition of the expiration of the predetermined pulse duration and the continued open position of the door; and



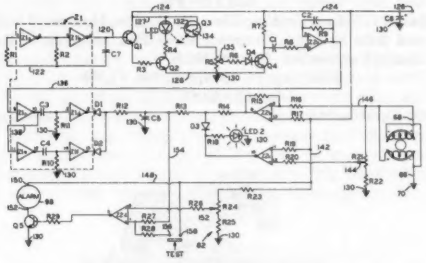
means responsive to said condition determining means for generating a signal when the concurrent condition is determined to exist.

4,278,969

DRIVER WARNING SYSTEM

Richard E. Woods, Markle, Ind., assignor to Reli Corporation, Markle, Ind.

Continuation-in-part of Ser. No. 828,529, Aug. 29, 1977, abandoned. This application May 16, 1979, Ser. No. 39,274
Int. Cl.³ G08B *19/00*
U.S. Cl. 340—576 **15 Claims**



1. A vehicle having a steering sensing apparatus comprising:

steering sensor means for sensing a predetermined steering movement and emitting a first signal upon such movement;

vehicle speed sensing means for sensing vehicle speed and emitting a second signal proportional to vehicle speed;

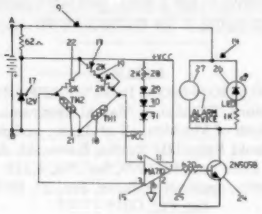
alarm means electrically coupled to said steering sensor means and said vehicle speed sensing means and responsive to said first and second signals for generating an alarm signal upon the absence of said first signal for a predetermined time period, said predetermined time period being changed in time duration in response to said second signal whereby the alarm signal is generated in accordance with steering movement and in accordance with said second signal which is continuously changed by instantaneous vehicle speed; and

means for manually varying said predetermined time period.

4,278,970
ALARM CIRCUIT FOR DETECTING OVERHEATED CONDITION

Michael Streczyn, 1218 Junipero, Redwood City, Calif. 94061, and Joseph B. Loughlin, 20701 Beach Blvd., Space 231, Huntington Beach, Calif. 92648

Filed May 2, 1979, Ser. No. 35,321
Int. Cl.[3] G08B 17/06, 21/00
U.S. Cl. 340—599 11 Claims



1. A detecting circuit for an overheated condition, comprising:

(a.) a d.c. powered bridge circuit having a detector thermistor in a bridge arm, the bridge being fed by the d.c. source;

(b.) t mistor response detector in an adjacent bridge arm, the detector being set for a response to thermistor changes in about the 300° K.–400° K. range;

(c.) a two state comparator amplifier for activation by the thermistor response detector:

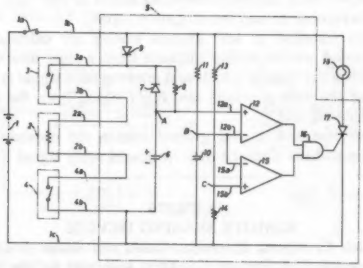
(d.) an on-off switch activated by the amplifier; and,

(e.) output signal means for the circuit connected to the on-off switch, whereby a bridge unbalance due to thermistor changes caused by an overload will activate the thermistor response detector, thereby activating the on-off switch and then turn on the output signal means.

4,278,971
ELECTRIC CONTROL CIRCUIT FOR SAFETY APPARATUS IN AUTOMOTIVE VEHICLES

Toshio Yasui, Obu, and Motoharu Naito, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 1, 1978, Ser. No. 938,876
Claims priority, application Japan, Sep. 6, 1977, 52-106906
Int. Cl.[3] G08B 21/00
U.S. Cl. 340—635 5 Claims



1. In an electric control circuit for a safety apparatus adapted to be actuated by electrically operated actuator means, said control circuit including an electric power source, a storage condenser connected with said power source through a resistor to store electric energy in a predetermined time constant, and normally open switch means interposed between said condenser and said actuator means to discharge said condenser through said actuator means upon closure of said switch means,

the improvement comprising:

second storage means connected with said power source through a second resistor for storing electric energy in a second predetermined time constant, the first-named time constant being normally larger than the second time constant;

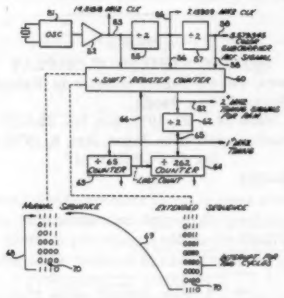
a comparator for comparing a first signal indicative of the stored electric energy of said first storage condenser with a second signal indicative of the stored electric energy of said second storage means to generate an output signal therefrom when the first-named time constant becomes smaller than the second time constant; and

means for informing of shortage of the stored electric energy of said first storage condenser when received the output signal from said comparator.

4,278,972
DIGITALLY-CONTROLLED COLOR SIGNAL GENERATION MEANS FOR USE WITH DISPLAY

Stephen G. Wozniak, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 910,125, May 26, 1978, abandoned, which is a division of Ser. No. 786,197, Apr. 11, 1977, Pat. No. 4,136,359. This application Jan. 8, 1980, Ser. No. 110,409
Int. Cl.[3] G06F 3/14
U.S. Cl. 340—703 11 Claims



1. A digitally controlled color signal generation means for use with a color video display adapted to receive color signals having a color subcarrier reference signal of frequency N, said color signal generation means comprising:

means for generating at least one digital word which corresponds to a predetermined color, said digital word comprising a plurality of bits;

storing means for storing said digital word;

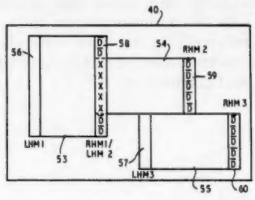
sampling means coupled to said storing means for sequentially sampling each of said bits of said digital word at a predetermined sampling rate, said sampling rate being selected such that a color signal is developed at an output of said sampling means which corresponds to said predetermined color and which has a frequency component at said frequency N,

whereby a color signal suitable for use with the video display is generated.

4,278,973
VIDEO DISPLAY TERMINAL WITH PARTITIONED SCREEN

Michael A. Hughes, Stockbridge; Jeremy S. M. Johnson, Rownhams, both of England, and Graham C. E. Winn, Woodstock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,732
Claims priority, application United Kingdom, Oct. 2, 1978, 39001/78
Int. Cl.³ G06F *3/153*
U.S. Cl. 340—721 **12 Claims**

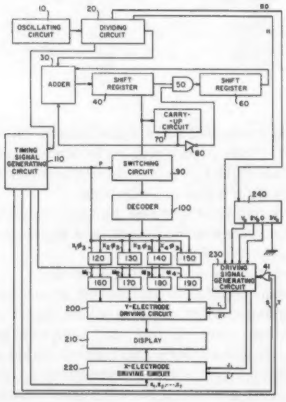


1. A video display terminal comprising:
a video display device for displaying characters;
a character buffer for storing therein character code bytes representing characters to be displayed;
display control logic means for causing characters corresponding to character code bytes stored in said character buffer to be displayed on said video display device; and
processing means for loading character code bytes representing characters to be displayed on said video display device into said character buffer in positions corresponding to the desired positions of the characters on the display device; and for defining two or more partitions on said video display device and for assigning margin attribute bytes to one margin of each partition.

4,278,974
DRIVING SYSTEM OF DISPLAY

Kenichi Kondo, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Mar. 27, 1979, Ser. No. 24,442
Claims priority, application Japan, Apr. 6, 1978, 53-40523
Int. Cl.³ G06F *3/147*
U.S. Cl. 340—784 **7 Claims**

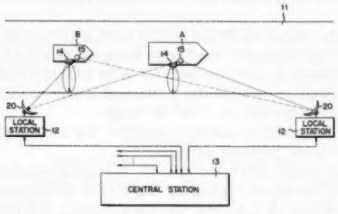


1. An apparatus comprising: a matrix display device with X electrodes and Y electrodes arranged in point-like displays at selected crossing points of the X and Y electrodes; and a display device driving system comprising timing signal generating means for controlling the X electrode scanning signals, display signal converter means receptive of a portion of the display information addressed by said timing signal generating means for converting the display information into a portion of the signals for display, a driving circuit for the Y electrodes, memory means for storing the portion of the signals for display for applying to the driving circuit for the Y electrodes, and means controlled by said timing signal generating means for inhibiting the drive to the Y electrodes while information to be stored is being stored in the memory means.

4,278,975
NAVIGATION-MONITORING APPARATUS

Yoshinori Kimura, Yokohama; Masuki Sunayama, and Yoshiki Okamoto, both of Machida, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 18, 1979, Ser. No. 4,533
Claims priority, application Japan, Jan. 27, 1978, 53-8104
Int. Cl.³ G01S *13/87*
U.S. Cl. 343—6 R **5 Claims**



1. A navigation-monitoring system for detecting the position of ships relative to a nearest bank and a ground station which comprises:
a transmitting and receiving device installed in a ground station to transmit an interrogation signal including a specified address code for each ship;
a transmitting and receiving device carried on each ship to receive said interrogation signal and issue a reply signal; said ship transmitting and receiving device including means for detecting said specified address code, and a ship-to-bank distance measuring device for measuring ship-to-bank distance, after detecting said specified address code, and providing data indicative thereof; said ship-to-bank distance data being added to said reply signal in response to said interrogation signal;
means installed in said ground station for calculating a ground station-to-ship distance from a time interval between the time at which said interrogation signal is issued and the time at which said reply signal from the ship is received; and
means installed in said ground station for obtaining said ship-to-bank distance data from said reply signal.

4,278,976
REMOTE SENSING DEVICE

Frederick C. Alpers, Riverside, Calif., and Klaus J. Hecker, Oberursel, Fed. Rep. of Germany, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 7, 1967, Ser. No. 690,708
Int. Cl.³ G01S *13/74*
U.S. Cl. 343—6.5 R **3 Claims**

1. In a system for battlefield and enemy support area surveillance, the combination comprising:
(a) sound recording and radio transmitting means adapted to

be air dropped behind enemy lines in a battlefield area including:

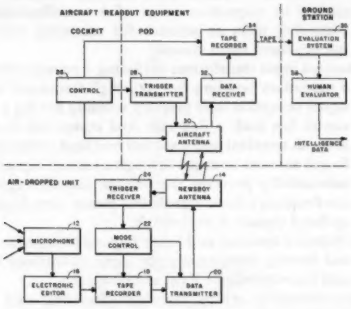
(1) a microphone for converting sound waves into electronic signals,

(2) electronic editor means coupled to said microphone for compressing said electronic signals into a bandwidth suitable for recording and playback transmission,

(3) tape recorder means coupled to said electronic editor for recording and playing back the compressed signals from said electronic editor means,

(4) mode control means,

(5) transmitter means coupled to said tape recorder and to said mode control means for transmitting signals received from said tape recorder when operating in the playback mode,



(b) radio signal receiving and recording means adapted to be located in an interrogating aircraft for receiving and recording signals received from said sound recording and radio transmitting means,

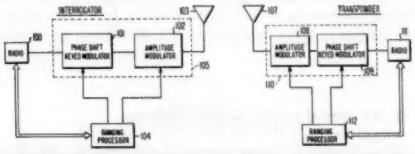
(c) a radio link coupling said sound recording and radio transmitting means to said radio signal receiving and recording means,

(d) a sound reconstruction system for receiving the recorded radio frequency signals for generating output audio signals which are a close approximation of the originally recorded audio signals.

4,278,977
RANGE DETERMINING SYSTEM

Edward J. Nossen, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 4, 1979, Ser. No. 36,012
Int. Cl.³ G01S *13/78*
U.S. Cl. 343—6.5 LC **9 Claims**



1. A range finding system comprising:

interrogation means for generating and transmitting an interrogation signal having at least one portion comprising a first carrier signal modulated by a signal which is a concurrent function of a first two-level tone of frequency f_T and a first iterative two-level pseudo random sequence whose level transitions are coincident with level transitions of said first two-level tone;

responding means for receiving said interrogation signal and for generating a first tracking signal which identifies the propagation delayed phases of said first tone and said first pseudo random sequence;

said responding means further comprising means for generating a responsive signal comprising a second carrier signal modulated by signal which is a concurrent function of a second two-level tone of frequency f_T and a second iterative psuedo random sequence whose phases are the same as the propagation delayed phases of said first tone and said first pseudo random sequence;

said interrogation means further comprising:

logic means for receiving said responsive signal, for generating a second tracking signal which identifies the propagation delayed phases of said second two-level tone and said second pseudo random sequence,

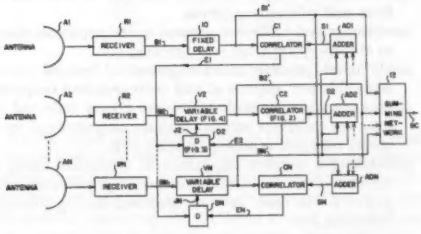
and for determining the phase difference between said interrogation signal before transmission thereof and said second tracking signal; and

means for computing the distance between said interrogation means and said responding means from said phase difference.

4,278,978
BASEBAND SIGNAL COMBINER FOR LARGE APERTURE ANTENNA ARRAY

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Mahlon E. Easterling, Altadena, and Robin A. Winkelstein, La Crescenta, both of Calif.

Filed Sep. 18, 1979, Ser. No. 76,643
Int. Cl.³ H04B *7/00*
U.S. Cl. 343—100 CL **17 Claims**



1. A baseband signal combiner for an antenna array comprising a plurality of antennas each having an associated receiver, each of said receivers providing a baseband output signal to be combined with other receiver baseband output signals, comprising:

means for phase comparing a first baseband signal and a first sum signal comprising all the other baseband signals, thereby generating a first correlation signal related to the phase difference between said first baseband signal and said first sum signal;

means for phase comparing each of the other baseband signals and a signal that is the sum of all the baseband signals except the baseband signal being compared, each phase comparison generating a correlation signal related to the phase difference between the baseband signal and the sum signal being compared;

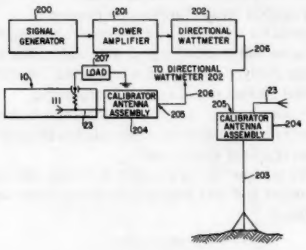
means for subtracting the phase difference represented by said first correlation signal from each of said other correlation signals, thereby generating a variable delay signal corresponding to each of the other baseband signals; and

means for adjusting the phase of each of said other baseband signals in accordance with its associated variable delay signal, thereby resulting in all of said baseband signals being in phase with each other.

4,278,979
METHOD AND APPARATUS FOR TESTING SURVIVAL RADIOS

William M. Pelino, Hollywood, Fla., assignor to ACR Electronics, Inc., Hollywood, Fla.

Filed Oct. 1, 1979, Ser. No. 80,498
Int. Cl.[3] G01R 1/00
U.S. Cl. 343—703 15 Claims



8. A method for calibrating a test apparatus for testing the operation of each one of a plurality of radio types by use of a calibrator antenna comprising an empty case of the radio type for which the calibration is to be performed secured to a corresponding antenna said antenna being adapted to radiate power into free space, said method comprising the steps of:

applying a predetermined magnitude of forward power to the calibrator antenna at a frequency corresponding to an operating frequency of the radio type for which the calibration is being performed;

radiating power into free space;

measuring the magnitude of reverse power reflected back from said calibrator antenna;

positioning said calibrator antenna in test apparatus adapted to absorb power from said antenna;

applying said predetermined magnitude of forward power to said calibrator antenna at said corresponding frequency;

comparing the magnitude of reverse power reflected back from the calibrator antenna with the magnitude of reverse power obtained in said measuring step;

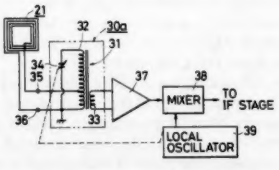
positioning a resistive impedance at a position along said antenna where the relation between forward and reverse power is the same as was measured during free space radiation; and

indicating said position of said resistive impedance to determine a calibration point for said radio type.

4,278,980
ANTENNA INPUT CIRCUIT FOR RADIO RECEIVER

Minoru Ogita, and Masahiro Takeyama, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 28, 1979, Ser. No. 24,854
Claims priority, application Japan, Mar. 30, 1978, 53-37164
Int. Cl.[3] H01Q 7/00
U.S. Cl. 343—748 13 Claims



1. An antenna input circuit for a radio receiver, comprising:

a first input transformer including a primary winding and a secondary winding, said primary winding having a grounded first end lead, a second end lead, and a tap lead;

a first capacitor connected across said first and second end leads to form a tuning circuit jointly with said primary winding;

a first antenna terminal connected to said tap lead of said primary winding;

a grounded second antenna terminal, said first and second antenna terminals being adapted to be connected with respective output leads of a low-impedance loop antenna having an inductance of 1 microhenry up to 100 microhenries for reception of medium-frequency-band radio waves;

a third and a fourth antenna terminal adapted to be connected to respective wires of a twin-lead type feeder extending from an antenna for receiving very-high-frequency-band radio waves;

a second input transformer including a primary winding and a secondary winding for very-high-frequency-band radio signal reception, said primary winding having a grounded center tap lead, a first end lead connected to said third antenna terminal and a second end lead connected to said fourth antenna terminal through a second capacitor which substantially prevents the passage therethrough of medium-frequency-band signals but passes very-high-frequency-band signals therethrough;

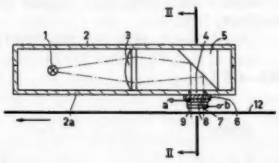
an inductor between said fouth antenna terminal and ground, and having substantially the same inductance as that of said low-impedance loop antenna; and

short-circuiting means for short-circuiting said first and fourth antenna terminals when reception of medium-frequency-band radio waves is intended without the connection of said low-impedance loop antenna but with the connection of said very-high-frequency-band radio wave receiving antenna.

4,278,981
OPTICAL PRINTER

Bernhard Hill, Hamburg; Klaus P. Schmidt, Quickborn, and Gerhard Graf, Siegen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,127
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1978, 2812206
Int. Cl.[3] G01D 9/42
U.S. Cl. 346—108 4 Claims



1. An optical printer which comprises:

a light source,

a photosensitive record carrier disposed in spaced relation to said light source,

means for forming characters in situ, said means including a character generator, said means being responsive to electronic signals from said character generator, said character generator being disposed between said light source and said photosensitive record carrier, said means for forming including a template which is a light switching mask including means for selectively varying the light transmission through each of a plurality of points, the number of said points being sufficient to provide a high resolution,

said means for selectively varying the light transmission

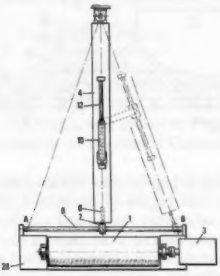
including integrated thin-film technology light switching elements and means for controlling said switching elements electronically with a character generator.

4,278,982

OPTICAL RECORDING DEVICE

Jacques Cholet, L'Etang-la-Ville; Bernard Damotte, Rueil-Malmaison, and Jean Laurent, Morainvilliers, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 16, 1979, Ser. No. 30,688
Claims priority, application France, Apr. 17, 1978, 78 11462
Int. Cl.³ G01D *15/14*
U.S. Cl. 346—108 **9 Claims**



1. An optical recording device suitable for continuously recording a large number of seismic traces, comprising:

means for displacing a horizontal photosensitive recording support in a first displacement direction;

a rigid arm mounted on and pivotable about a fixed horizontal axis located above said recording support and parallel to said first displacement direction, driving means for imparting to said rigid arm an oscillatory pendular motion about its axis, and guide means adapted to confine the pendular motion of the arm to a vertical plane substantially perpendicular to said first displacement direction;

an optical system secured to said rigid arm and oriented substantially along the longitudinal direction thereof, said optical system being adapted to generate a variable light beam; and

a monitoring system for synchronizing the control of said optical system with the pendular motion of said rigid arm, comprising a detection assembly secured to said rigid arm and adapted to transmit a periodic electrical signal whose period is a function of the rate of the displacement of said arm, and control means for introducing data to be recorded into said optical system with a recurrence period depending upon that of the electrical signal generated by said detection assembly.

4,278,983

INK JET WRITING DEVICE

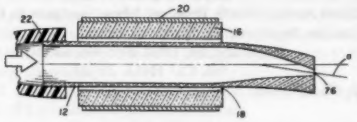
Laszlo Halasz, Brecksville, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed May 23, 1979, Ser. No. 41,842
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **1 Claim**

1. An improved ink jet writing device comprising:

a tubular glass liner having an integral outlet orifice with smoothly converging geometry at one end thereof, said liner having a longitudinal axis and said orifice being radially displaced from said axis to form a liner with an angled outlet orifice;

a cylindrical piezoelectric transducer surrounding said liner and in stress transmitting engagement with said liner, said transducer being adapted to contract radially in use to



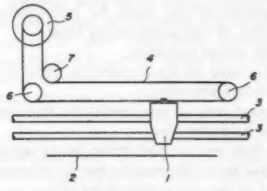
displace a small quantity of liquid through said outlet orifice.

4,278,984

CONSTANT FLOW RATE LIQUID SUPPLY PUMP

Masafumi Matsumoto, and Matahira Kotani, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 28, 1979, Ser. No. 70,639
Claims priority, application Japan, Aug. 30, 1978, 53-106836
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **13 Claims**



1. An ink liquid supply system for an ink jet system printer, said ink jet system printer comprising a nozzle for emitting an ink liquid supplied from said ink liquid supply system and a beam gutter for collecting waste ink droplets emitted from said nozzle and for recovering the ink liquid toward said ink liquid supply system, said ink liquid supply system comprising:

an ink liquid reservoir for containing the ink liquid therein; and

a constant flow rate pump comprising:

a cylinder block;

a piston disposed in said cylinder block;

drive means for reciprocating said piston in said cylinder block;

two diaphragms fixed to desired positions of said piston;

a first pressure chamber defined by said cylinder block and an end of said piston;

a second pressure chamber defined by one of said two diaphragms, said piston and said cylinder block;

a third pressure chamber sandwiched by said two diaphragms;

a first inlet valve for introducing the ink liquid from said beam gutter to said second pressure chamber;

a first outlet valve for developing the ink liquid from said second pressure chamber to said ink liquid reservoir;

a second inlet valve for introducing the ink liquid from said ink liquid reservoir to said third pressure chamber;

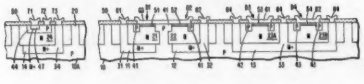
valve means for supplying the ink liquid developed from said third pressure chamber to said first pressure chamber; and

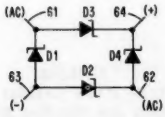
a second outlet valve for supplying the ink liquid developed from said first pressure chamber to said nozzle.

4,278,985
MONOLITHIC INTEGRATED CIRCUIT STRUCTURE INCORPORATING SCHOTTKY CONTACT DIODE BRIDGE RECTIFIER

William Stobbs, North Reading, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 14, 1980, Ser. No. 140,038
Int. Cl.[3] H01L *29/48*
U.S. Cl. 357—15 15 Claims





1. Monolithic integrated circuit structure incorporating a metal-semiconductor rectifying barrier diode bridge comprising

a body of semiconductor material;

a first sector of said body electrically isolated from the remainder of the body by intervening semiconductor material of one conductivity type;

said first sector including

a first zone of semiconductor material of the opposite conductivity type,

a second zone of semiconductor material of the opposite conductivity type,

said first and second zones being separated from each other by an intervening barrier of semiconductor material of the one conductivity type;

a first layer of metal-semiconductor rectifying barrier forming metal in contact with said first zone forming a rectifying barrier therebetween;

a second layer of metal-semiconductor rectifying barrier forming metal in contact with said second zone forming a rectifying barrier therebetween;

a second sector of said body electrically isolated from the remainder of the body by intervening semiconductor material of the one conductivity type;

said second sector including

a third zone of semiconductor material of the opposite conductivity type, and

a fourth zone of semiconductor material of the opposite conductivity type;

a third layer of metal-semiconductor rectifying barrier forming metal in contact with said third zone forming a rectifying barrier therebetween;

a fourth layer of metal-semiconductor rectifying barrier forming metal in contact with said fourth zone forming a rectifying barrier therebetween;

first connection means in ohmic contact with the first zone of semiconductor material and connected to said third layer of metal;

second connection means in ohmic contact with the second zone of semiconductor material and connected to said fourth layer of metal;

third connection means connected to said first and second layers of metal; and

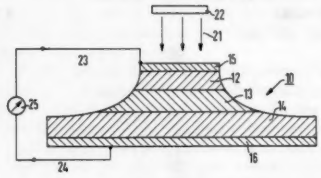
fourth connection means in ohmic contact with the third and fourth zones of semiconductor material;

whereby a bridge rectifier of four metal-semiconductor rectifying barrier diodes is provided, which in response to an AC voltage across the first and second connection means produces a DC voltage across the third and fourth connection means.

4,278,986
SEMICONDUCTOR DIODE

Hermann Mader, Carl-Duisberg-Str. 42, 8025Unterhaching, Fed. Rep. of Germany

Filed Jan. 2, 1979, Ser. No. 103
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1978, 2800820
Int. Cl.[3] H01L *29/00*
U.S. Cl. 357—33 4 Claims

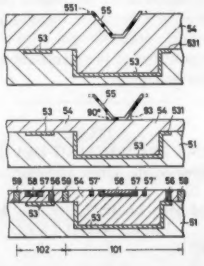


1. A three layer pnp or npn semiconductor diode formed with a middle base region of opposite conductivity type located between an emitter region and a collector region with a first ohmic contact affixed to an exterior surface of the emitter region and a second ohmic contact affixed to an exterior surface of the collector region, characterized in that the base region is selected to have a width in combination with a doping density of the emitter which is on the order of two orders of magnitude greater than a doping density of the base which in turn is on the order of two orders of magnitude greater than a doping density of the collector region such that the base region is fully depleted of free charge carriers without an applied external voltage.

4,278,987
JUNCTION ISOLATED IC WITH THICK EPI PORTION HAVING SIDES AT LEAST 20 DEGREES FROM (110) ORIENTATIONS

Ichiro Imaizumi, Hinodemachi; Masatoshi Kimura, Hachioji, and Keijiro Uehara, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1978, Ser. No. 950,671
Claims priority, application Japan, Oct. 17, 1977, 52-123474; Dec. 26, 1977, 52-173999[U]; Aug. 28, 1978, 53-103944
Int. Cl.[3] H01L *27/04, 21/302, 21/20, 21/76*
U.S. Cl. 357—48 7 Claims



1. A semiconductor device comprising:

a semiconductor substrate having a first conductivity type and having a surface on one of (a) the (100) crystal plane and (b) a plane inclined within 5° against the (100) crystal plane;

a dent provided on a surface region of said substrate;

a highly doped layer having a second conductivity type opposite to the first conductivity type, provided on a surface region of said substrate in a portion of said dent and extending on a surface region of said substrate from a peripheral portion of said dent; and

a semiconductor layer having the second conductivity type, having a lower impurity concentration than that of said highly doped layer and provided on the surface of said substrate, said semiconductor layer filling up said dent and having a substantially flat surface, thereby said semiconductor layer having a thick portion on said dent and a thin portion on the surface of said substrate other than said dent,

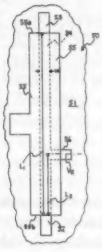
wherein said dent has a polygonal shape having main sides, each of which is parallel to at least one specific direction selected from a direction of the <100> crystal axis and directions inclined within 25° against the <100> crystal axis.

4,278,988

SEMICONDUCTOR DEVICE FOR PROVIDING A SELECTABLE REFERENCE VOLTAGE

James A. Clifford, San Diego, and Daniel E. Pearson, La Jolla, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 4, 1980, Ser. No. 118,616
Int. Cl.³ H01L *27/02, 29/78*
U.S. Cl. 357—51 **10 Claims**



1. A semiconductor device for providing a selectable reference voltage; said device being comprised of:

a semiconductor substrate doped with atoms of a first conductivity type and having a major surface;

a channel having input and output terminals, and having an elongated portion of a first predetermined length L_1 and a uniform width W in said substrate near said surface for passing current between said terminals;

a single gate on an insulating layer completely overlying said channel; and

a conductive region in said substrate near said surface doped with atoms of a conductivity type opposite to said first type, contacting the elongated portion of said channel at a predetermined length L_2 from one end thereof, to pick-off said reference voltage as generated by said current in said channel as a function of the ratio L_1/L_2.

4,278,989

SEMICONDUCTOR DEVICE HAVING CROSS WIRES

Fumio Baba; Kiyoshi Miyasaka; Takashi Yabu, all of Yokohama, and Jun-ichi Mogi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Tokyo, Japan

Filed Jan. 15, 1979, Ser. No. 3,286
Claims priority, application Japan, Jan. 20, 1978, 53-5933[U]
Int. Cl.³ H01L *27/00*
U.S. Cl. 357—59 **13 Claims**

2. A semiconductor device having at least one crossover structure for two respective wiring lines, said device comprising:

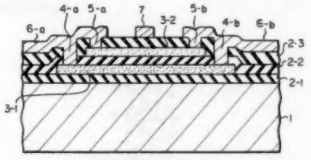
a semiconductor substrate;

a first insulating film covering the surface of said semiconductor substrate;

a lower layer and an upper layer of a conductive semiconductor extending selectively over said first insulating film, said layers extending at least in part along a common direction, and said upper layer overlapping to a major extent said lower layer at least along said extension in said common direction;

a second insulating film separating said lower and upper layers of a conductive semiconductor;

a third insulating film selectively covering said upper layer of said conductive semiconductor and any exposed portions of said lower conductive semiconductor layer and said semiconductor substrate in at least a region over said common extension of said conducting semiconductor layers;



two portions of a first metallic wire layer formed selectively on said second and third insulating film, each said portion of said first metallic wire layer being commonly connected to a respective pair of adjoining ends of said lower and upper layers of said conductive semiconductor, thereby connecting said lower and upper layers in parallel between said two portions of said first metallic wire layer along said common direction; and

a second metallic wire layer formed on a portion of said third insulating film to cross over said parallel-connected conductive semiconductor layers in said region of common extension of said conductive semiconductor layers, said second metallic wire layer and said lower and upper layers of conducting semiconductor in said region being comprised in said at least one crossover structure.

4,278,990

LOW THERMAL RESISTANCE, LOW STRESS SEMICONDUCTOR PACKAGE

Julie Y. Fichot, Skaneateles, N.Y., assignor to General Electric Company, Auburn, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,488
Int. Cl.³ H01L *23/02, 23/28, 23/42*
U.S. Cl. 357—81 **13 Claims**

1. A semiconductor device having low thermal impedance and low electrical resistance comprising:

a base member adapted to be mounted to an external heat-sink in low thermal impedance connection therewith;

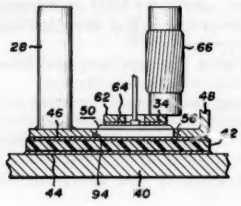
an insulating member disposed on said base member and bonded thereto with a low thermal impedance bonding layer;

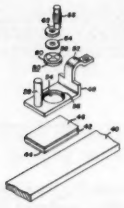
a thin highly annealed current spreading layer disposed on said insulating layer in low thermal impedance relation therewith, said current spreading layer characterized by low electrical resistance;

an electrically and thermally conductive stress relief means on said current spreading layer for matching the thermal coefficient of expansion of said semiconductor element and said current spreading layer;

a semiconductor element on said stress relief means in low stress bonding relationship therewith for minimizing the stress on said semiconductor element due to the difference in coefficient of thermal expansion between said current spreading layer and said semiconductor element; and

an electrode on said current-spreading layer surrounding said stress relief means but laterally spaced apart therefrom to form a capillary chamber between the sidewalls of said stress relief means and the inside wall of said electrode, a solder layer in said capillary chamber thermally





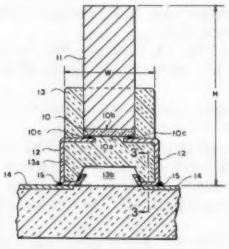
and electrically connecting said electrode to said stress relief member for providing electrical connection between said semiconductor element and said electrode without contributing to the thermal impedance between said semiconductor element and said base member.

4,278,991

IC PACKAGE WITH HEAT SINK AND MINIMAL CROSS-SECTIONAL AREA

Ronald J. Ritchie, La Mesa, and Daniel M. Andrews, San Marcos, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 13, 1979, Ser. No. 65,940
Int. Cl.[3] H01L *23/02, 23/48, 29/44*
U.S. Cl. 357—81 **7 Claims**



1. An integrated circuit package comprised of:

a substantially flat semiconductor chip having first and second oppositely facing major surfaces with said first major surface containing both said integrated circuit and a plurality of raised pads connected to said circuit;

an elongated heat sink having a cross-section that substantially matches said second major surface and which is attached at one end thereof by an adhesive to said second major surface;

a plurality of spaced apart C-shaped leads respectively connected at one end thereof to said raised pads; each of said leads extending outward from said pads beyond the periphery of said chip, then parallel to the direction of elongation and away from said heat sink, and then inward towards each other; and

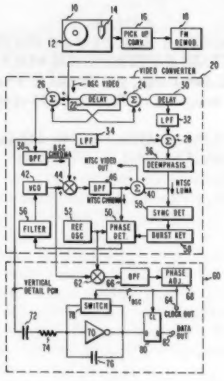
a solid mass encapsulating said chip, only a portion of said elongated heat sink with said portion being adjacent said chip, and said outward extending portion of said leads to rigidly hold said encapsulated components in place.

4,278,992

PCM DETECTOR FOR VIDEO REPRODUCER APPARATUS

Todd J. Christopher, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 28, 1980, Ser. No. 125,640
Int. Cl.[3] H04N *8/493*
U.S. Cl. 358—13 **5 Claims**



1. A PCM detector for use in video reproducer apparatus of the type in which digital data is represented by serial synchronous pulse code modulation of a video signal produced by said apparatus and synchronously detected by means of a color burst component of said video signal, said video signal tending to exhibit leading and trailing edge distortion, said detector comprising:

oscillator means responsive to said color burst component of said video signal for producing a reference signal of predetermined phase relative to signaling intervals of said pulse code modulated video signal;

phase shifting means responsive to said reference signal for producing a clock signal in phase quadrature with said signaling intervals of said pulse code modulated video signal;

integrator means having an input terminal for receiving said pulse code modulated video signal and an output terminal for providing an integrated output signal;

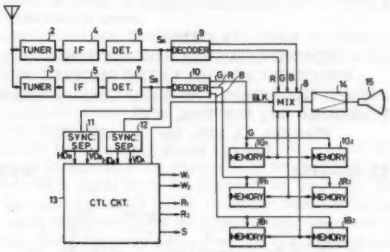
control means responsive to said clock signal and coupled to said integrator means for enabling said integrator means when said clock signal is of a first value during the central portion of each signaling interval and for resetting said integrator means when said clock signal is of a second value during initial and terminal portions of each signaling interval; and

output means responsive to transitions of said clock signal and to said integrated output signal for detecting said digital data corresponding to said pulse code modulated video signal at the end of each integration period and for storing said digital data until the end of the next integration period to produce a pulse code modulated digital data output signal having reduced leading and trailing edge distortion.

4,278,993
COLOR PICTURE-IN-PICTURE TELEVISION RECEIVER

Toshio Suzuki, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,675
Claims priority, application Japan, Nov. 20, 1978, 53-143144
Int. Cl.³ H04N 9/535
U.S. Cl. 358—22 **8 Claims**



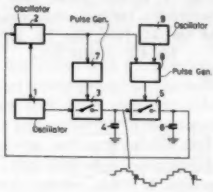
1. A system for inserting a reduced picture of a first channel broadcast into a picture of a second channel broadcast on a single screen in a picture-in-picture television receiver, comprising: a first tuner, I.F., video detector, and decoder chain for producing video signals of said first channel broadcast; a second tuner, I.F., video detector, and decoder chain for producing video signals of said second channel broadcast; a first group of three memories connected to the first chain for memorizing R, G and B signals obtained from a first field of video signals of said first channel broadcast; a second group of three memories connected to the first chain for memorizing R, G and B signals obtained from a second field of the video signals of said first channel broadcast; control means for writing in one of said R, G and B signals into a corresponding one of said first group of three memories and the remaining two of said R, G and B signals into a corresponding remaining two of said first group of three memories during said first field by first and second trains of writing pulses, respectively, the second train of pulses being opposite in phase to the first train; during said second field said control means writing in said one of the R, G and B signals into one of the second group of three memories and said remaining two of the R, G and B signals being written into a corresponding remaining two of said second group of three memories during the second field by said second train and said first train, respectively.

4,278,994
CIRCUIT ARRANGEMENT IN A COLOR TELEVISION ENCODER

Nicolaas J. L. Van der Valk, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 12, 1979, Ser. No. 75,048
Claims priority, application Netherlands, May 28, 1979, 7904157
Int. Cl.³ H04N 9/44
U.S. Cl. 358—25 **7 Claims**

1. A circuit arrangement in a color television encoder, comprising a first oscillator for generating a chrominance subcarrier signal and a second oscillator for generating a signal having the line frequency or a multiple thereof, wherein one of said oscillators is adjustable, said circuit arrangement further comprising a frequency control loop which includes the adjustable one of said oscillators and a mixer circuit coupled to the outputs of said first and second oscillators for generating a frequency control signal for the adjustable one of said oscillators, characterized in that said circuit arrangement further comprises a phase control loop, also coupled to the adjustable one of said oscillators, which includes a first sample-and-hold

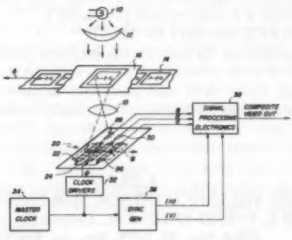


circuit for providing a phase control signal for the adjustable one of said oscillators.

4,278,995
COLOR LINE SENSOR FOR USE IN FILM SCANNING APPARATUS

William T. Fearnside, Fishers, and Teh-Hsuang Lee, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,030
Int. Cl.³ H04N 9/11
U.S. Cl. 358—54 **5 Claims**



1. A color line sensor for use in a color image scanning apparatus of the type having means including image forming optics for projecting a two-dimensional color image, a line sensor for scanning the projected image at a predetermined line scan rate, and means for continuously displacing the projected image relative to the line sensor in a direction perpendicular to the line scan to effect an image raster scan composed of a number of equally spaced lines, the color line sensor comprising:

first line sensing means responsive to a first wavelength range of light for producing a first color signal;

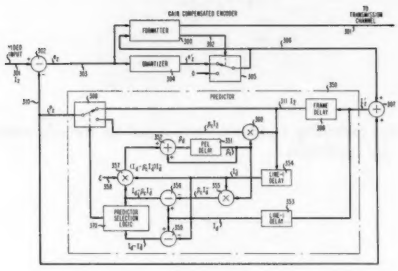
second line sensing means, spaced from said first line sensing means a distance corresponding to N times the spacing between scan lines of the raster scan and in the direction of relative image motion, where N is an integer, and responsive to a second wavelength range of light for producing a second color signal; and

delay means responsive to said first color signal for producing a delayed first color signal, the delay being equal to N times the time required to scan one line, whereby said delayed first color signal and said second color signal represent scans of the same location in the image at a given instant in time.

4,278,996
TECHNIQUE FOR ENCODING PICTORIAL INFORMATION

Arun N. Netravali, Matawan; John D. Robbins, Aberdeen, both of N.J., and John A. Stuller, Rolla, Mo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 11, 1980, Ser. No. 139,584
Int. Cl.³ H04N *7/12*
U.S. Cl. 358—136 **24 Claims**



1. Apparatus for encoding a video signal which represents the intensity values of a plurality of elements of a picture, including:

means for forming at least first and second predictions p_1 and p_2 of the intensity value I(x,t) of a particular element in a present frame of said picture,

means for comparing each prediction p_1 and p_2 with said intensity value I(x,t) to determine which prediction produces the smaller error e, and

means for encoding the magnitude of said error e and the location of said particular element only if said magnitude exceeds a predetermined threshold T,

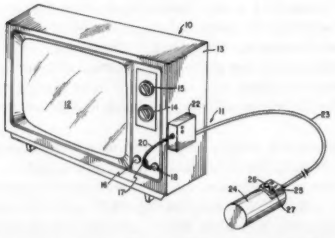
CHARACTERIZED IN THAT

said prediction forming means includes means for forming one of said predictions p_1 by multiplying the intensity value $I(x,t-\tau)$ of said particular element in a previous frame of said picture by a recursively updated gain factor ρ.

4,278,997
REMOTE VOLUME CONTROL FOR TELEVISION SET

Raymond L. Folz, 22-40 123rd St., College Point, N.Y. 11356

Filed Aug. 25, 1978, Ser. No. 936,830
Int. Cl.³ H04B *1/06*; F16C *1/12*
U.S. Cl. 358—194.1 **3 Claims**

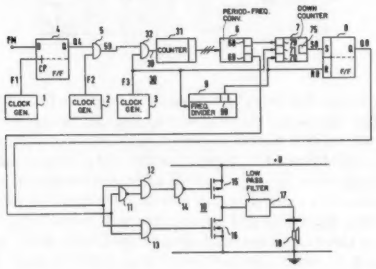


1. A remote control mechanism for regulating a volume control means of a television, said volume control means including a rotary shaft, said mechanism comprising an unshielded, resilient flexible shaft, means for connecting said unshielded, resilient flexible shaft directly and coaxially to the rotary shaft of said volume control means, a forward/reverse electric motor and reduction gearing train assembly, said gearing train being connected to said motor for reducing the output revolutions of said motor, a housing for said motor and gearing train assembly, said housing being adapted to be attached to said set adjacent to said volume control, said flexible shaft being connected to the output of said gearing train for rotation thereby and being of a length, flexibility and strength sufficient to interconnect said gearing train and said rotary shaft to effect rotation of the latter when said gearing train rotates said flexible shaft, a remotely hand-held housing having externally operated forward and reverse switching means and an electrical wire interconnecting said switching means and said electric motor means.

4,278,998
SOUND CHANNEL CIRCUIT FOR FREQUENCY-MODULATED SIGNALS

Leslie Miskin, Gundelfingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 13, 1980, Ser. No. 121,185
Int. Cl.³ H04N *5/60*
U.S. Cl. 358—198 **6 Claims**



1. A circuit for the sound channel of radio or television receivers wherein a signal frequency-modulated with the sound signals is demodulated; and wherein the sound signals are reproduced by means of a power output stage and a loudspeaker, comprising:

D flip-flop means having an amplitude-limited frequency-modulated signal applied as a square-wave signal to the data signal input thereof, and having a clock input connected to the output of a first clock generator;

first AND gate means having a first input thereof coupled to the Q output of said D flip-flop means, and a second input thereof connected to the output of a second clock generator;

digital period-measuring circuit means having the output of said first AND gate coupled to the measuring input thereof, and including a counter, a third clock generator and input gate;

a period-frequency converter means having the digital output signal of the period-measuring circuit coupled thereto, and having a first output for a first digital output signal, giving the absolute value of the frequency deviation of the frequency-modulated signal, and a second output for a second digital output signal, giving the sign of the frequency deviation of the frequency-modulated signal;

a down-counter means having the first output of the period-frequency converter coupled to the preset input thereof, and having its count input connected to the output of the third clock generator;

RS flip-flop means having the zero output of the down-counter is coupled to the S input thereof;

frequency divider means having the output of the third clock generator is coupled to the input thereof;

wherein the R input of the RS flip-flop and the count enable input of the down-counter are connected to one of the outputs of the frequency divider, and wherein the divisor associated with said output being greater than the maximum number (df'_{max}) occurring at the first output of the

period-frequency converter, and the total divisor of the frequency divider being greater than said divisor;

the Q output of the RS flip-flop is coupled to the first inputs of second AND gate means and a third AND gate means;

the second input of the second AND gate being connected to the second output of the period-frequency converter via a first inverter, and the second input of the third AND gate being connected to said output directly;

the output of the second AND gate being coupled via a second inverter to the control electrode of one of two power transistors having their controlled current paths connected in series;

the output of the third AND gate being coupled to the control electrode of the other of said two power transistors;

the junction point of the controlled current paths of the two power transistors being connected via a low-pass filter to a loudspeaker;

whereby the frequency (f_1) of the first clock signal (**F1**) is equal to the sum of the sound carrier frequency (f_T) of the television signal or of the intermediate frequency (f_Z) of the radio broadcast signal, twice the value of the upper cutoff frequency (f_g) of the power output stage, and twice the maximum value (df_{max}) of the frequency deviation ($f_1=f_T+2f_g+2df_{max}$ or $f_1=f_Z+2f_g+2df_{max}$);

the frequency (f_2) of the second clock signal (**F2**) is equal to twice the value of the upper cutoff frequency (f_g) of the power output stage ($f_2=2f_g$), and

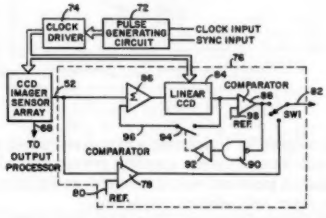
whereby the third clock generator is crystal-stabilized, and the frequency (f_3) of the third clock signal (**F3**) is an integral multiple of the color subcarrier frequency.

4,278,999

MOVING IMAGE SCANNER

Biswa N. Ganguly, Dayton, Ohio, and Suresh C. Paranjpe, Dallas, Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Sep. 12, 1979, Ser. No. 75,065
Int. Cl.³ H04N *3/12, 3/14*
U.S. Cl. 358—213 **14 Claims**



13. An image scanner for scanning a document along a plurality of scan lines and providing a plurality of print control signal pulses in response to the image density of pixel areas of said document along said scan lines, comprising:

means for projecting a moving document image onto a focal plane,

a sensor array positioned in said focal plane, said array comprising a first plurality of sensor groups positioned in a row, each of said sensor groups including a plurality of sensors, positioned in a column, for receiving light from respective pixel areas on said image along a corresponding one of said scan lines and providing electrical outputs related to the image density of said respective pixel areas, each of said columns extending substantially parallel to the direction of image motion, said sensor array further comprising a second plurality of sensor groups positioned in a second row, and spaced from said first row of sensor groups in the direction of image motion by a predetermined distance, each of said second plurality of sensor groups including a plurality of sensors, positioned in a column extending substantially parallel to the direction of image motion, for receiving light from respective pixel areas on said image along a corresponding one of said scan lines, the scan lines corresponding to said second plurality of sensor groups interlacing with the scan lines corresponding to said first plurality of sensor groups,

a first plurality of column shift registers, each such column shift register associated with a corresponding one of said first plurality of sensor groups and including a plurality of register stages with each stage receiving an electrical output from a respective one of said sensors in the associated sensor group, each such column shift register responsive to a column shift signal for shifting the electrical outputs in said register stages to adjacent stages in the direction of image motion, said electrical outputs being shifted toward an output stage in each of said column shift registers,

a second plurality of column shift registers, each of said second plurality of shift registers associated with a corresponding one of said second plurality of sensor groups and including a plurality of register stages with each stage receiving an electrical output from a respective one of said sensors in the associated one of said second plurality of sensor groups, each such column shift register responsive to a column shift signal for shifting the electrical outputs in said register stages to adjacent stages in the direction of image motion, said electrical outputs being shifted toward an output stage in each of said column shift registers,

a first row shift register defining a plurality of row register stages, each such row register stage associated with one of said output stages, for storing the electrical outputs from said output stages and shifting said outputs to adjacent row register stages in response to a row shift signal,

a second row shift register defining a plurality of row register stages, each such row register stage associated with one of said output stages of said second plurality of shift registers, for storing the electrical outputs from said output stages and shifting said outputs to an adjacent row register stage in response to a row shift signal,

a first plurality of register transfer gate means, each such register transfer gate means connecting an output stage of one of said first plurality of column shift registers and the respective row register stage associated therewith, for transferring to each of said row register stages an electrical output from the associated output stage in response to a transfer signal,

a second plurality of register transfer gate means, each such register transfer gate means connecting an output stage of one of said second plurality of column shift registers and the respective row register stage associated therewith, for transferring to each of said row register stages an electrical output from the associated output stage in response to a transfer signal,

means for generating said column shift signal, said transfer signal, and said row shift signal, said row shift signal being substantially equal in frequency to the rate at which successive pixel areas along said scan lines are scanned by each sensor times the number of sensor groups in said first plurality of sensor groups, the frequency of said transfer signal being equal to the rate at which successive pixel areas along said scan lines are scanned by each sensor, and the frequency of said column shift signal being substantially equal to the rate at which pixel areas along said scan lines are scanned by each sensor, and

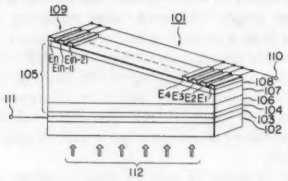
output processor means, responsive to said first and second row shift registers, for sequentially comparing each of the electrical outputs stored in said row shift registers with a reference electrical potential and providing print control signal pulses when an electrical output exceeds said reference electrical potential, thereby providing line copy print control signal pulses.

4,279,000

PHOTOELECTRIC INFORMATION INPUT APPARATUS

Tadaji Fukuda, Kawasaki, and Susumu Sugiura, Yamato, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1979, Ser. No. 60,824
Claims priority, application Japan, Jul. 26, 1978, 53-91049
Int. Cl.³ H04N *3/14*
U.S. Cl. 358—213 **4 Claims**



1. A photoelectric information input apparatus comprising:

a photoelectric converting unit having

a photoelectric converting layer provided between a linear array of a number n of picture element electrodes and a counter electrode and having a charge generating portion provided on an electrode transparent to the incident light and a charge transporting portion for effectively transporting the charge generated in said charge generating portion, said photoelectric converting layer having a wedge shaped configuration and the varying wedge thickness, and at least one insulating layer provided between said photoelectric converting layer and said counter electrode or between said photoelectric converting layer and said linear array of picture element electrodes; and

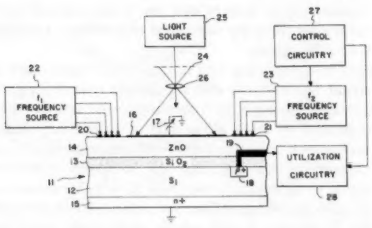
means for generating control signals for controlling said photoelectric converting unit so as to obtain electric signals corresponding to the optical signals received by said photoelectric converting portion.

4,279,001

IMAGE READOUT DEVICE WITH ELECTRONICALLY VARIABLE SPATIAL RESOLUTION

Harry A. Benz, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 28, 1980, Ser. No. 135,039
Int. Cl.³ H04N *5/30*
U.S. Cl. 358—213 **8 Claims**



1. In an image readout device, a detector for detecting light at discrete points along a straight line comprising:

a surface acoustic wave charge transfer device which in response to a frequency source produces a traveling longitudinal electric field in the device that creates potential wells which carry charges that are injected into the wells by light that strikes the device;

a first means for applying a frequency f_1 to said charge transfer device for producing a first traveling longitudinal electric field in the device along said straight line;

a second means for applying a frequency f_2 to said charge transfer device for producing a second traveling longitudinal electric field in the device along said straight line in the direction opposite to the electric field produced by said first means;

wherein f_2 is a harmonic of f_1, has the same amplitude as f_1 and is phase stable with f_1, whereby the first and second traveling longitudinal fields produce a standing wave along said straight line that has a frequency equal to the difference of f_1 and f_2;

means for applying an image to said device whereby light charges are stored in the wells of said standing wave;

means for disconnecting f_2 from said device whereby said standing wave breaks up and the charges stored in the wells of said standing wave are moved along said straight line by the first traveling longitudinal electric field; and

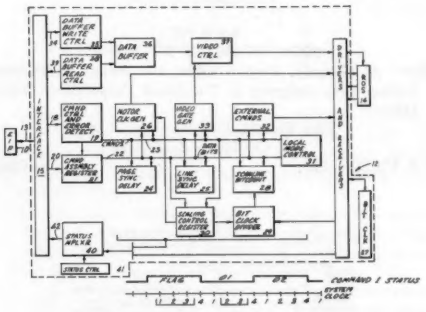
electrode means included with said charge transfer device receiving the charges moved along said straight line by the first traveling longitudinal electric field.

4,279,002

ADAPTER FOR RASTER OUTPUT SCANNING PRINTER

Ronald E. Rider, Palos Verdes Estates, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 24, 1978, Ser. No. 899,137
Int. Cl.³ H04N *1/36*
U.S. Cl. 358—257 **5 Claims**



1. An adapter for interfacing a digital electronic image processor with a raster output scanning printer, said adapter having dedicated input and output connections for printer control and operation, said adapter comprising:

means for receiving at a first dedicated input connection digital command data from said electronic image processor and for initiating control functions in response thereto;

means for receiving at a second dedicated input connection digital clock signals of a predetermined uniform frequency transmitted thereto by said electronic image processor and for distributing said clock signals throughout said adapter;

means for receiving in bit parallel format at a set of third dedicated input connections packets of video print information from said electronic image processor and for retiming said video information for transmission to said printer;

means for monitoring the transmission of video print information to said printer and for generating data request signals at a first dedicated output connection to said electronic image processor in order to thereby request additional packets of video print information from said electronic image processor;

means for monitoring the status of said adapter and said printer and for serializing status information and generating said status information at a second dedicated output

connection for transmittal to said electronic image processor; and

said means for receiving command data and for initiating control functions in response thereto comprises sampling means responsive to command bits which occur at a frequency which is an integer quotient of the frequency of said digital clock pulses, said sampling means including means for detecting command bit polarity with the occurrence of consecutive ones of said digital clock pulses during command pulses, means for comparing the command bit polarities detected, and means for generating an error signal when said means for comparing registers an unequal comparison in order to abort the performance of control functions in response to command data including any data bit in which sampling and comparison as aforesaid produces an unequal comparison.

4,279,003

PICTURE CONTRAST-INCREASING ARRANGEMENTS

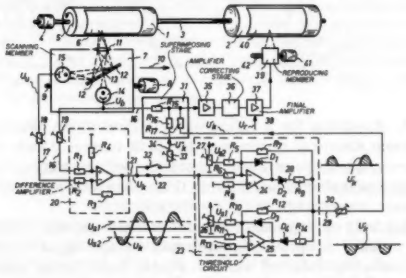
Joachim Schulz, Mönkeberg, Fed. Rep. of Germany, assignor to Dr. Ing Rudolf Hell G.m.b.H., Monkeberg, Fed. Rep. of Germany

Filed Feb. 1, 1979, Ser. No. 8,585

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1978, 2805237

Int. Cl.[3] H04N *1/40*

U.S. Cl. 358—280 **6 Claims**



1. In an arrangement for increasing contrast when reproducing originals containing line elements, comprising

(a) an opto-electronic scanning member having a main aperture and an unsharp masking aperture respectively operative to generate a picture signal and an unsharp masking signal, the diameter of said main aperture being approximately equal to the width of the line elements in said original,

(b) a difference stage operatively connected to said scanning member to generate a difference signal from said picture signal and said unsharp masking signal,

(c) a threshold circuit operatively connected to said difference stage, which allows positive parts of said difference signal lying above a first threshold value and negative parts lying below a second threshold value to pass through, and

(d) means for superimposing selectable proportions of said parts of the difference signal which have been passed by said threshold circuit onto said picture signal as a first correcting signal to increase contrast for line elements in said original.

4,279,004

METHOD FOR CONTROLLING ROTARY MEMORY DEVICE

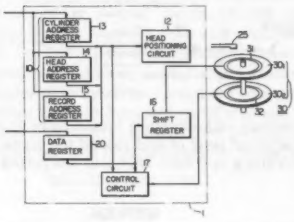
Yoshiaki Yamashita; Hiroyuki Kambara, both of Hadano; Hiroaki Kambayashi, and Yasuyuki Okada, both of Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 3, 1979, Ser. No. 35,530

Claims priority, application Japan, Oct. 4, 1978, 53-121541

Int. Cl.[3] G11B *5/09*

U.S. Cl. 360—48 **3 Claims**



1. A method for controlling a rotary memory apparatus for storing at least one record including at least an address section identifying the record and a data section forming the data of the record, in a recording medium along a track, said method comprising the steps of:

dividing the track into a plurality of sectors each being of the same fixed length;

storing the address section of a given record in one of the sectors together with a flag for distinguishing the stored address section from other types of sections in other sectors;

storing the data section for a given record in at least one of the sectors succeeding the sector in which the address section is stored;

searching for said flag in succeeding sectors, in the operation of seeking access to the stored data section, after the detection of the beginning point of each sector;

reading out the address section which follows the flag, upon the detection of the flag;

comparing the read-out address section with externally supplied address information; and

making an access to the data section stored in the succeeding sector, upon the detection of coincidence between the read-out address section and the address information as a result of said comparison.

4,279,005

METHOD AND SYSTEM FOR AUTOMATICALLY PROVIDING FLAT FREQUENCY RESPONSE TO AUDIO SIGNALS RECORDED ON MAGNETIC TAPES

Masatsugu Kitamura; Hideo Onoye, and Masami Yamazaki, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed May 23, 1979, Ser. No. 41,822

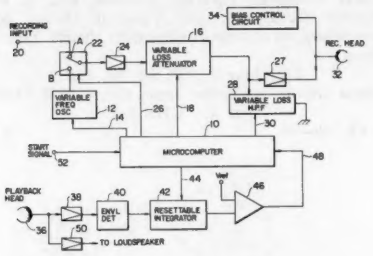
Claims priority, application Japan, May 28, 1978, 53-63609; Jun. 10, 1978, 53-70066; Jul. 23, 1978, 53-89611

Int. Cl.[3] G11B *5/47, 5/45, 77/36*

U.S. Cl. 360—66 **21 Claims**

1. A method for automatically providing a flat response to signals over the audio frequency spectrum based on the magnetic properties of a magnetic tape, comprising successively generating first and second audio test signals at different frequencies during a test period, recording said test signals in said tape, reproducing the recorded first and second test signals successively, sensing the level of the reproduced first and second signals, storing the sensed level of the first signal in a storage medium, comparing the sensed level of the second test signal with the stored level of the first test signal to detect the

difference therebetween, adjusting the level of the recorded second test signal in accordance with the detected difference



so as to reduce said difference substantially to zero, and holding the adjusted level of said second test signal during subsequent recording operation after said test period.

4,279,006

MAGNETIC TAPE RECORDING AND/OR REPRODUCING APPARATUS

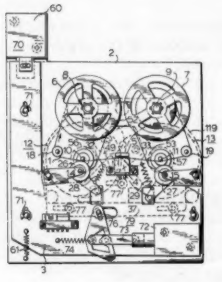
Toshiharu Sasaki, Kawanishi; Noboru Katakabe, Katano, and Yoshihiro Yokoyama, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 17, 1979, Ser. No. 30,879

Claims priority, application Japan, Apr. 21, 1978, 53/47981; Apr. 21, 1978, 53/47983

Int. Cl.[3] G11B *15/24, 15/28, 5/54*

U.S. Cl. 360—90 **9 Claims**



1. A magnetic tape recording and/or reproducting apparatus, comprising:

a magnetic head;

two tape winding reels;

a first capstan and a first pressure roller opposed thereto, a second capstan and a second pressure roller opposed thereto, said pressure rollers being movable into contact with said capstans for transporting a magnetic tape;

two fixed motor means, one being coaxial with and directly driving said first capstan and the other being coaxial with and directly driving said second capstan;

tape direction control means connected to said pressure rollers for selectively bringing said first or second pressure roller into contact with said first or second capstan, respectively, for selectively driving said tape in one or the other direction; and

transmission means to which said tape direction control means is connected for driving said tape winding reels under the control of said tape direction control means, said transmission means having means for transmitting the rotary motion of said motors and being selectively engagable with one of said two winding reels and one of said two motor means while being disengaged from said other motor means or with the other of said two winding reels and the other of said two motors while being disengaged from said one motor means, depending on the direction in which said tape is to be transported, whereby said magnetic tape is selectively transported in one or the other direction for recording and/or reproducing.

4,279,007

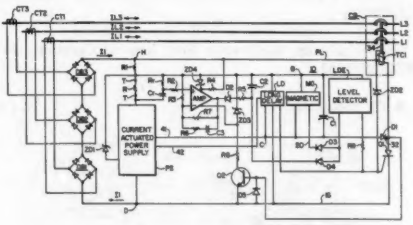
SINGLE-PHASE FAULT DETECTING CIRCUIT BREAKER

Alan B. Shimp, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 12, 1979, Ser. No. 57,054

Int. Cl.[3] H02H *3/16*

U.S. Cl. 361—47 **21 Claims**

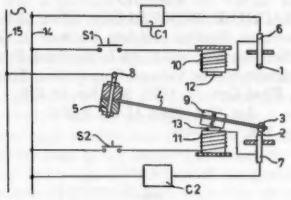


4,279,008

RELAY

Walter del Picchia, Dept° Eng. e Electricidade - Escola Politecnica - USP - Cidade Universitaria; Wagner W. Martins, Rua Barao de Itauna No. 155; Decio G. Silveira, Rua Urimonduba No. 66, Apt. 92, and del Picchia Sergio, Rua das Margaridas No. 26, Apt. 43, all of Sao Paulo - SP -, Brazil

Filed Feb. 16, 1979, Ser. No. 12,770
Claims priority, application Brazil, Aug. 22, 1978, 7805413
Int. Cl.³ H01H *47/04*
U.S. Cl. 361—194 **18 Claims**



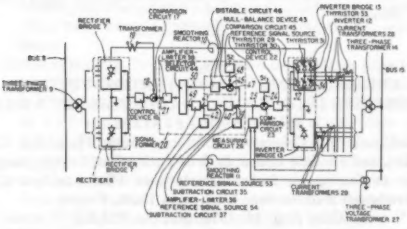
1. A relay comprising at least one fixed contact, one movable contact mounted on an element capable of assuming a first configuration in which the movable contact is separated from said fixed contact and a second configuration of contact between the movable contact and said fixed contact, first means to make said element assume and maintain said first configuration and second means to make said element assume and maintain said second configuration, characterized by the fact that said first means comprise a first electromagnetic device to make said element assume the first configuration by means of forces of repulsion and a permanent magnet so as to maintain said element in the first configuration by means of forces of attraction and the second means comprise a second electromagnetic device to make said element assume the second configuration by means of forces of repulsion and a permanent magnet to maintain the element in the second configuration by means of forces of attraction, said first electromagnetic device having an energizing circuit comprising the movable contact and the mentioned fixed contact.

4,279,009

METHOD AND REGULATING DEVICE FOR CONTROLLING HIGH-VOLTAGE DIRECT CURRENT TRANSMISSION SYSTEM

Valery A. Andronov, ulitsa Vernosti, 14, korpus 1; Alexandr I. Boyarsky, ulitsa Khlopina, 3, kv. 10; Viktor I. Emelyanov, prospekt Engelsa, 40, kv. 40, and Iosif B. Nabutovsky, Beloostrovskaya ulitsa, 25, kv. 20, all of Leningrad, U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,222
Int. Cl.³ H02J *3/36*
U.S. Cl. 363—35 **4 Claims**



1. A method for controlling a high-voltage direct current transmission system having a rectifier of the controlled valve type at its transmitting end and an inverter of the controlled valve type at its receiving end, said method comprising the steps of

maintaining the current supplied from said rectifier to said inverter in accordance with its reference value by adjustably controlling the firing angles of the rectifier valves; and

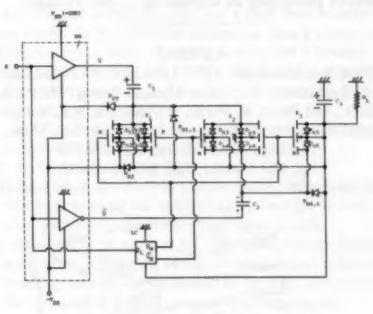
varying the reference value of the current supplied from said rectifier to said inverter in accordance with variations in the difference between a predetermined value and the smallest of the margin angles of the inverter valves when the smallest of the margin angles of the inverter falls below said predetermined value, so that the reference value of the current supplied from said rectifier to said inverter is reduced with an increase in the difference between said predetermined value and said smallest of the margin angles of the inverter valves, and the reference value of the current supplied from said rectifier to said inverter is increased with a reduction in the difference between said predetermined value and said smallest of the margin angles of the inverter valves, the reference value of the current supplied from said rectifier to said inverter being set above or equal to the minimum permissible value of the current supplied from said rectifier to said inverter.

4,279,010

DC-DC CONVERTER FOR SOLID STATE WATCHES

Mitsuo Morihisa, 29 Shibatsujiminami-cho, Nara-shi, Nara-ken, Japan

Continuation of Ser. No. 714,757, Aug. 16, 1976, abandoned. This application May 12, 1978, Ser. No. 905,293
Claims priority, application Japan, Aug. 14, 1975, 50-99165
Int. Cl.² H02M *7/00*
U.S. Cl. 363—60 **8 Claims**



1. A DC-DC converter having a C-MOS driver stage and a voltage multiplier stage including a plurality of capacitors, comprising:

field effect mode switching transistor means in series with the respective capacitors of said voltage multiplier for controlling the charging and discharging of the respective capacitors in response to control signals applied to said field effect mode switching transistors;

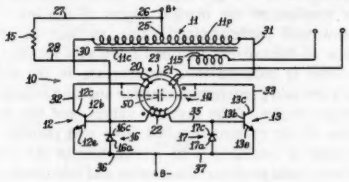
level converter means for providing control signals applied to said field effect mode switching transistors in response to enable signals applied to said C-MOS driver stage and the highest voltage appearing at the last stage of said voltage multiplier; and

bypass means for providing charging and discharging path for the respective capacitors through parasitic diodes within said field effect mode switching transistor means, said bypass charging and discharging paths not including the circuit path through the gate, source, and drain of said field effect mode switching transistor means, said bypass means being operable from the initial start-up of said DC to DC converter up to the stable state at the starting thereof.

4,279,011
SIMPLE, HIGH-EFFICIENCY INVERTER CIRCUITS

Ole K. Nilssen, Caesar Dr. - Rte. 4, Barrington, Ill. 60010

Filed Mar. 26, 1979, Ser. No. 23,849
Int. Cl.[3] H02M 7/537
U.S. Cl. 363—133 26 Claims



1. In an inverter circuit for converting DC voltage into AC voltage a drive circuit having a pair of alternating conducting switching transistors, each with a collector and a base-emitter junction and characterized by some internal resistance, and comprising:

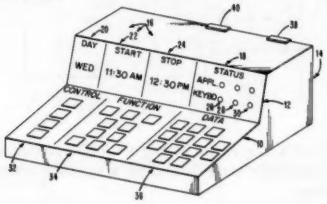
feedback control means including a saturable current transformer having one winding connected directly between the base-emitter junctions of the transistors and operable to provide intermittent drive signals to the transistors for turning them on alternately; and

diode means connected across the base-emitter junction of each transistor and characterized by internal resistance less than that of the associated transistors and operable to affect the rapid turning off of a conducting transistor for thereby producing an alternating output voltage.

4,279,012
PROGRAMMABLE APPLIANCE CONTROLLER

David L. Beckedorff, Wellesley; Michael Sporer, Harvard, both of Mass., and Bruce R. Watts, Portsmouth, R.I., assignors to Massachusetts Microcomputers, Inc., Wellesley, Mass.

Filed Oct. 23, 1978, Ser. No. 953,558
Int. Cl.[2] G06F 15/20; H01H 43/00
U.S. Cl. 364—104 44 Claims



1. Controller apparatus for controlling the operation of a device, said apparatus comprising:

A. switch means having a control input, a source input and a source output;

B. first means for coupling said source output to said device;

C. second means for coupling an energy source to said source input;

D. means for receiving a control signal at said control input, wherein the presence of said control signal at said control input enables the coupling of said energy source from said source input to said source output; and

E. means for generating said control signal comprising

1. means for providing the current time of day,

2. storage means for storing information indicative of at least one period of time of a potential plurality of periods of time during which said control signal is to be generated, said storage means including a plurality of storage locations, each of said locations corresponding to a predetermined time interval, and wherein each of said periods of time is comprised of at least one of said predetermined time intervals,

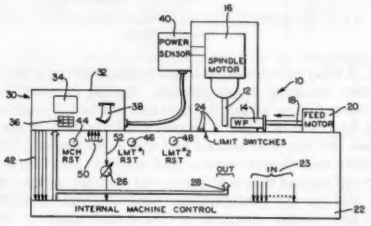
3. means for entering into said storage means information defining anyone of said periods of time, said information including the requirement for only a start time and a stop time for each of said periods of time, and

4. means, responsive to said current time of day and said information stored in said storage means, for enabling the generation of said control signal.

4,279,013
MACHINE PROCESS CONTROLLER

Larry E. Cameron, Sterling Heights; Kenneth J. Cook, Troy; Vance E. Neff, Detroit, and Keith L. Rowland, Pontiac, all of Mich., assignors to The Valeron Corporation, Troy, Mich.

Filed Oct. 31, 1979, Ser. No. 89,436
Int. Cl.[3] G05B 13/02, 23/02
U.S. Cl. 364—105 58 Claims



1. A controller for a machine having a tool for removing material from a workpiece, said controller comprising:

sensing means for monitoring the power used by the machine;

limit setting means for supplying a first limit value defining a first extreme level of power consumption for the machine;

comparison means for comparing outputs of said sensing means and said limit setting means, operative to provide an output signal if the machine power consumption has exceeded the limit value;

first programmable timer means capable of storing a selectively alterable time period;

manually actuable means for loading said timer means with a selected time period; and

output means capable of altering the machine operation when the machine power consumption has continuously exceeded the limit value for said selected time period whereby electrical noise and expected fluctuations peculiar to the machine operation may be accommodated without disturbing the optimum machine operating conditions.

4,279,014
ARRANGEMENT FOR CONVERTING VIRTUAL ADDRESSES INTO PHYSICAL ADDRESSES IN A DATA PROCESSING SYSTEM

Jean-Claude M. Cassonnet, Conflans Sainte Honorine; Guy Hiot, and Violette Cohen, both of Paris, all of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Aug. 14, 1978, Ser. No. 933,546
Claims priority, application France, Aug. 17, 1977, 77 25121
Int. Cl.[3] G06F 9/20
U.S. Cl. 364—200 2 Claims

1. In a data processing system of the type having a virtual memory including a main physical memory and an auxiliary memory,

space in said main physical memory being allocated on the

principle of segmentation wherein said main memory is divided into a plurality of logical groupings termed segments, each segment occupying contiguous main memory space and being treated as a unit,

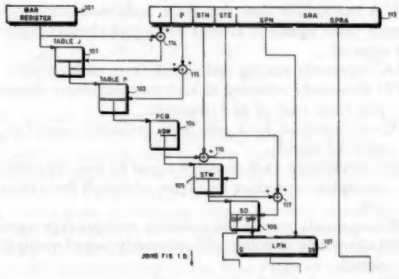
addressing and other characterizing information for each segment being defined by a respective segment descriptor stored in said main physical memory, and

the segment descriptors being grouped into segment tables in said main physical memory, each segment descriptor thus being a segment table entry;

an arrangement for translating a virtual address of an item of data into a physical address, the virtual address being expressed as an effective address word including zones (STN and STE) for designating a particular segment table out of the group of segment tables and a particular segment table entry in the particular segment table, the segment table entry being a segment descriptor, and a segment relative address zone (SRA) which is divided into a segment page number zone (SPN) for indicating the number of the page in the segment to which the item of data belongs and a zone (SPRA) which designates the address of the item of data in the page defined by the segment page number (SPN), said arrangement comprising:

each of the plurality of segment descriptors stored in said main physical memory as segment table entries including an area (SRF) which contains a unique reference for the segment;

means for addressing a segment descriptor in said main



physical memory based on the contents of the zones (STN and STE) in the effective address word designating a particular segment table and entry;

means for generating a logic page number (LPN), which means operate to concatenate the unique reference for the segment (SRF) which is contained in the addressed segment descriptor to the segment page number (SPN) which is contained in the effective address word;

a logic page table (LPT) stored in said main physical memory, said logic page table containing at each address two entries, one entry being a logic page number entry and the other entry being a corresponding physical page number entry;

means indicating the starting address of said logic page table;

means for adding the generated logic page number to the indicated starting address of said logic page table to create an LPT address, which when applied to the logic page table (LPT) locates a logic page number entry and a physical page number entry for each said LPT address;

means for comparing the generated logic page number to the logic page number entry to indicate a match; and

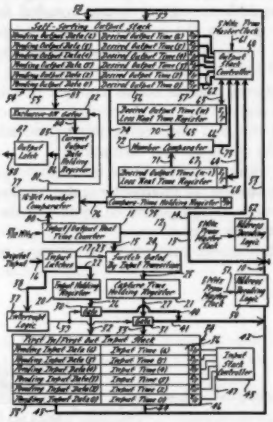
means for generating the physical address of the item of data in main physical memory by concatenating the physical page number entry and the zone (SPRA) which designates the address of the item of data in the page defined by the segment page number, said means for generating the physical address being activated when a match occurs between the generated logic page number and the logic page number entry.

4,279,015

BINARY OUTPUT PROCESSING IN A DIGITAL COMPUTER USING A TIME-SORTED STACK

Brian S. Edelman, Dearborn, and Ralph L. Robinson, Jr., Canton Township, Plymouth County, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 13, 1979, Ser. No. 48,198
Int. Cl.³ G06F 3/00
U.S. Cl. 364—200 **8 Claims**



1. In a digital computer that has a real time counter and a memory/address bus and that generates binary output data in the form of bytes, each of which is assigned a desired output time and each of which has at least one bit of output information, improved processing of the binary output data comprising the steps of:

(a) entering bytes of binary output data together with their assigned desired output times in a stack;

(b) time-sorting the entries in the stack;

(c) comparing the desired output time of the binary output data byte in the stack which has the earliest desired output time with the count in the real time counter;

(d) making the binary output data byte, whose desired output time is compared, available as an output when the real time represented by the count in the real time counter and the compared desired output time correspond.

4,279,016

INSTRUCTION PRE-FETCH MICROPROCESSOR INTERRUPT SYSTEM

Joel C. Leininger; Floyd R. Bliss, both of Boca Raton, Fla., and Peter T. Fairchild, Woodstock, Ga., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 21, 1979, Ser. No. 50,888
Int. Cl.³ G06F 3/04, 9/38
U.S. Cl. 364—200 **24 Claims**

1. In a data processing system which includes:

a microprocessor apparatus operable in instruction cycles between a running state wherein instructions are processed and a wait state wherein no instructions are processed by the microprocessor and wherein microprocessor instructions generate enable and disable interrupt commands, the microprocessor generating instructions for changing page information, performing storage operations, branch and link operations and return operations; a page storage unit for storing page information which is set and reset to a zero state by microprocessor instructions; a storage unit for storing data and instructions; an arithmetic and logic unit having associated status bits which are set and reset to a zero state by microprocessor instruc-

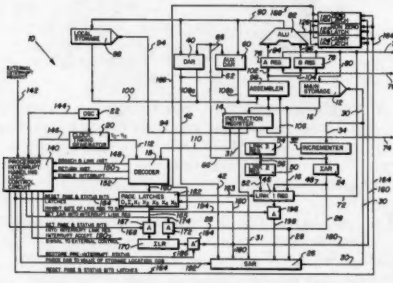
tions; a plurality of peripheral devices connected to the microprocessor, the plurality of peripheral devices generating interrupt requests to the microprocessor for operating in an interrupt cycle; and the system operating in a pre-fetch mode wherein a next succeeding instruction is fetched from the storage unit while a current instruction is being executed, an interrupt system for processing interrupt requests received by the microprocessor from the plurality of peripheral devices cmprising:

instruction address register means coupled to the storage unit for holding the next succeeding address to be pre-fetched in a sequence of instructions and operable to be updated to the value of the next succeeding address;

storage address register means coupled to said instruction address register means and coupled to the storage unit for holding the next succeeding instruction address during execution of the current instruction;

first latch means coupled to the microprocessor for receiving and storing an interrupt request received from the microprocessor and generated by one of the plurality of peripheral devices;

second latch means coupled to the storage unit and controlled by the microprocessor instructions for enabling and disabling interrupts that are received from the microprocessor when said first latch means has stored an interrupt request from the microprocessor;



interrupt link register means coupled to said instruction address register means for storing the values stored in said instruction address register means when an interrupt request is generated from one of the plurality of peripheral devices to the microprocessor;

interrupt means coupled to said first and second latch means for inhibiting the updating of the value of said instruction address register means to a next succeeding instruction to be pre-fetched during the first succeeding cycle following storage of an interrupt request by said first latch means;

means coupled to said first and second latch means and responsive to a successful branch operation resulting from the next instruction stored in said instruction address register for inhibiting operation of said interrupt means until completion of the successful branch operation; and

means coupled to said first and second latch means and responsive to storage of data in the storage unit for inhibiting operation of said interrupt means until completion of the storage cycle.

4,279,017

METHOD AND DEVICE FOR DETECTING THE PRESENCE OF ONE OR MORE PULSE CODE MODULATED MULTI-FREQUENCY CODE SIGNALS

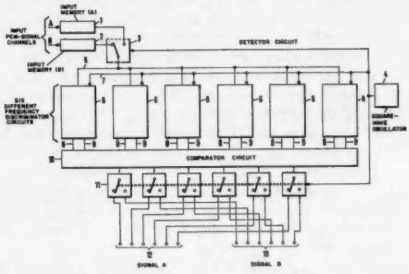
Bernardus W. Bos, Leidschendam, and Harke M. Wijbenga, Zoetermeet, both of Netherlands, assignors to Staat der Nederlanden (Staatsbedrijf der Posterijen, Telegrafie en Telefonie), The Hague, Netherlands

Filed Aug. 21, 1979, Ser. No. 68,406

Claims priority, application Netherlands, Sep. 8, 1978, 7809213

Int. Cl.[3] **G06F** *15/20;* **G01R** *23/14*

U.S. Cl. 364—484 **13 Claims**



1. A method for detecting pulse code modulated multi-frequency code signals in at least one signal channel comprising the steps of:

(A) separately storing said signals from each channel,

(B) alternately selecting at least two successive sample signals from each of said channels,

(C) detecting at least one multi-frequency signal in each selected sample,

(D) modulating each detected signal by two separate given multiples to produce two types of signals from each sample,

(E) separately storing the resulting multiple-type signals,

(F) alternately selecting said separately stored multiple-type signals,

(G) comparing said selected multiple-type signals, and

(H) transferring said compared multiple-type signals for further processing.

4,279,018

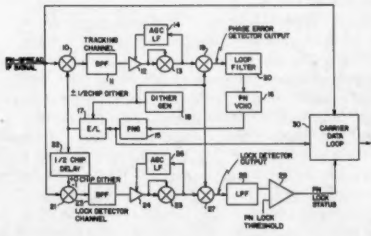
PN LOCK INDICATOR FOR DITHERED PN CODE TRACKING LOOP

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Lansing M. Carson, Tempe, Ariz.

Filed Mar. 6, 1979, Ser. No. 17,886

Int. Cl.[3] **H04L** *7/08, 27/22*

U.S. Cl. 364—514 **6 Claims**



4. In a delay-lock dithered PN code tracking loop for track-

ing a received PN-spread IF signal, apparatus for an indication of lock in said PN code tracking loop, wherein said loop utilizes a local PN code signal dithered by $\pm\frac{1}{2}$ a code bit period in response to a dither control signal, a lock detector channel comprising

means for delaying said dithered local PN code signal by half a code bit period,

means for correlating said dithered and delayed local PN code signal with said received PN-spread IF signal to produce a DC signal proportional to the degree of correlation between said signals, and

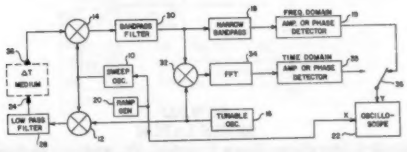
means for phase detecting said DC signal with said dither control signal to produce a DC lock detector output signal proportional to the degree of correlation between said received PN-spread signal and said dithered and delayed local PN code.

4,279,019

METHOD AND APPARATUS FOR DELAY ANALYSIS OF ENERGY TRANSMITTED THROUGH A MEDIUM

Richard C. Heyser, Tujunga, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed May 15, 1979, Ser. No. 39,154
Int. Cl.³ G06F *15/20*; G01S *9/23*
U.S. Cl. 364—569 **24 Claims**



1. A method for determining the manner by which wave energy is modified by a medium comprising the steps of

transmitting through said medium wave energy which is swept in frequency over a predetermined range of interest,

detecting said wave energy received through said medium at a remote point to obtain an output electrical signal which varies in frequency in a manner corresponding to the sweep of said wave energy, but delayed in time by an amount corresponding to the time delay of transmission through said medium, where said time delay may be zero,

providing a generated signal swept in frequency in a manner corresponding to the sweep of said wave energy, but offset in time by an amount corresponding to the time delay of transmission of a particular path through said medium, where said particular path through said medium may be a direct, zero-time-delay path, and mixing said swept signal with said output electrical signal developed from energy waves detected, thereby to produce an IF signal for analysis in the frequency domain, and

performing a further operation on the IF signal over the entire frequency spectrum of interest to produce a signal for display of amplitude or phase in the time domain.

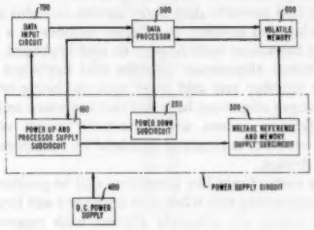
4,279,020

POWER SUPPLY CIRCUIT FOR A DATA PROCESSOR

Ronald W. Christian, and Walter G. Kutzavitch, both of Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 18, 1978, Ser. No. 934,817
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 **12 Claims**

1. A power supply circuit for a data processor to which a data input circuit is connected, operation of the data input circuit providing an input to the data processor, the power supply circuit including a power up circuit that is latched on responsive to the operation of the data input circuit and when latched on supplies power from a power source to the processor, the power up circuit comprising a single pair of complementary transistors arranged so that an output electrode of each transistor is connected to an input electrode of the other transistor, a first of the transistors having its third electrode adapted to be connected to the power source, and the second



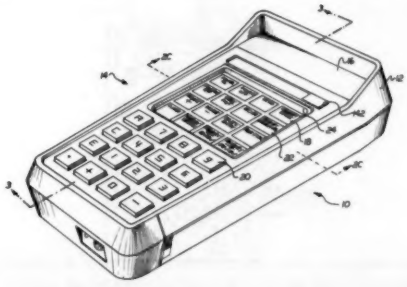
transistor having its third electrode connected to the power input of the data processor, the operation of the data input circuit completing a path from the input electrode of the first transistor to a point that is essentially at a common reference potential to latch the power up circuit on.

4,279,021

PORTABLE DATA ENTRY APPARATUS INCLUDING PLURAL SELECTABLE FUNCTIONAL CONFIGURATIONS

Gary G. See, Chagrin Falls, and Robert J. Robbins, Walton Hills, both of Ohio, assignors to Telxon Corporation, Bath, Ohio

Filed Feb. 15, 1979, Ser. No. 12,400
Int. Cl.³ G06F *15/06*
U.S. Cl. 364—900 **13 Claims**



1. Apparatus comprising

a portable hand-held data entry device including a keyboard having an array of keys thereon, said keys being actuable by manual depression for data entry or data manipulation, wherein the operations performed by said data entry device upon actuation of said keys is established by coded indications provided to said device by coding means interconnectable therewith,

coding means removably interconnectable with said portable data entry device, said coding means providing coded indications thereto to select the functions to be performed by said portable data entry device upon actuation of said keys, and

key identification means associated with said coding means and comprising a sheet of material adapted to be removably laid over said array of keys, said sheet having sufficient pliance that said keys may each be actuated by depressing the corresponding portion of said sheet, and having an array of key identifiers carried thereon in an arrangement corresponding to the arrangement of said

keys on said keyboard, a frame member for carrying said pliant sheet of material, said frame member being substantially rigid and adapted to hold said pliant sheet by the perimeter thereof so as to hold said sheet of material, and thus said key identifiers, in a predetermined alignment with respect to said frame member, and

wherein said portable data entry device includes means for receiving and holding said frame member in a predetermined alignment with respect to said keyboard, said predetermined alignments between said keyboard and said frame member and said sheet material being selected so that proper alignment between said keyboard and said key identification means will necessarily result when said frame member is received and held by said portable data entry device,

whereby each of said key identifiers will be positioned over a corresponding key when said keyboard and key identification means are properly aligned with respect to one another, and with each of said key identifiers identifying the function of said corresponding key when said associated coding means is interconnected with said device, and whereby the operator controllable functions performed by said device may be tailored to specific end uses of the device by interconnecting an appropriate coding means and associated key identification means therewith.

4,279,022

ELECTRONIC CALCULATION/MEMORANDUM APPARATUS

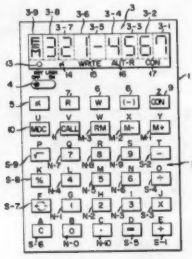
Kazuhiro Abe, Yokosuka, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 904,773, May 11, 1978, abandoned. This application May 29, 1980, Ser. No. 154,289

Claims priority, application Japan, May 14, 1977, 52/55847; Dec. 9, 1977, 52/147807; Dec. 24, 1977, 52/155823

Int. Cl.³ G06F *3/02, 3/14*

U.S. Cl. 364—900 **29 Claims**



1. An electronic calculation/memorandum apparatus comprising:

a housing;

an alpha-numerical display on said housing;

a first random access memory means for storing a plurality of pairs of sequence of entered alphabetical index data and numerical characters, each pair being stored at a given location;

a second random access memory means for storing a sequence of numerical data;

a keyboard mounted on said housing and having a plurality of manually operable alpha-numerical keys at least some of which are associated with both an alphabetical character and a numerical character and a plurality of mode changing keys, one of said mode changing keys being a first letter key for switching, following manual operation thereof, the apparatus into a memorandum mode and for entering a sequence of alphabetical characters to be stored in a first part of one location of said first memory means, a second write key for causing after first manual operation, said previously entered sequence of alphabetical characters to be stored, and, after subsequent manual operation, a sequence of numerical characters entered after said first operation to be stored in a second part of said one location of said first memory means, a read key for causing, after manual operation, stored sequences to be displayed and a call key for causing, after manual operation thereof and operation of said write key, a stored sequence in said second memory means to be stored in said second part of said one location of said first memory means;

logic means connected to said, first random access memory means and second random access memory means, said display and said keyboard for carrying out arithmetic calculations upon sequences of numerical characters, storing the results thereof in a register and displaying said results in said alpha-numeric display and for controlling storage in said locations in accordance with manual operation of said letter, read and write keys and storage in said second memory means when the apparatus is in memorandum mode of said results in said register.

4,279,023

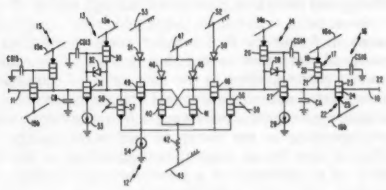
SENSE LATCH

Russell J. Houghton, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,050

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—174 **18 Claims**



1. A memory array comprising:

first and second bit lines, each bit line having a distributed capacitance,

a charge storage data cell coupled to one of said bit lines,

a charge storage reference cell coupled to the other of said bit lines,

a sense amplifier comprising;

first and second voltage nodes, and

first and second cross coupled latching transistors, each having an emitter, a base and a collector, the collector of each transistor being connected to a respective bit line and to the base of the other latching transistor and coupled to said first voltage node and the emitter of each transistor being connected in common and coupled to said second voltage node,

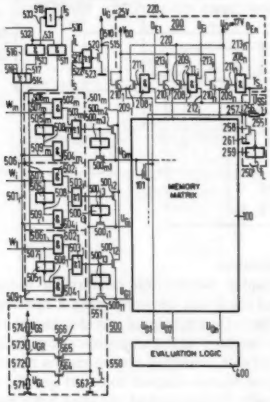
means for writing information into said data cell, and

means for reading information stored in the data cell by referring it to the state of the reference cell and turning on one of said cross coupled transistors to discharge both bit lines through said turned on cross coupled transistor to amplify the stored information and preset the bit lines to the voltage levels required to write the data cell.

4,279,024
WORD-BY-WORD ELECTRICALLY REPROGRAMMABLE NONVOLATILE MEMORY

Hartmut Schrenk, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 12, 1979, Ser. No. 47,746
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1978, 2828855
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—203 13 Claims



1. A word-by-word electrically reprogrammable nonvolatile memory comprising:

a matrix including

a plurality of memory cells, each of said memory cells being chargeable and dischargeable to predetermined states including write and erase states;

a plurality of memory lines connected to said memory cells;

state control means, including voltage producing means, connected to said memory lines for selectively operating said memory cells towards said predetermined states; and

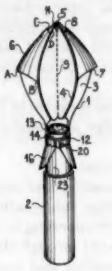
monitoring means connected to said memory cells and to said state control means for monitoring the charge state of said memory cells and terminating operating of said state control means in response to the monitored cells attaining said predetermined states and thereby providing variable duration state control signals.

4,279,025
RELEASABLE AIRBORNE BUOY

Vito Suppa, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 13, 1979, Ser. No. 57,422
Claims priority, application France, Jul. 18, 1978, 78 21276
Int. Cl.[3] B63B *21/52;* H04B *1/59*
U.S. Cl. 367—3 11 Claims

1. A buoy capable of being dropped onto water from an aircraft, comprising an inflatable balloon attached to a container, wherein the balloon is inflated during its descent by a forced intake of air at the base of the balloon and said balloon contains a membrane made of a flexible material which is capable of blocking the air inlet or outlet openings of the balloon, the pressure of the balloon thus being equal to the maximum dynamic pressure of the air during the descent, said ballon having adjustable openings in the form of scoops and a sealed passage connecting the upper part of the scoops to the

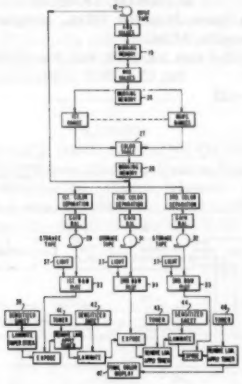


lower part of the balloon and the forced intake of air taking place through the opening of these scoops.

4,279,026
SEISMOGRAPHIC DATA COLOR DISPLAY

Orbie N. Lambright, and Mangat R. Thapar, both of Tulsa, Okla., assignors to Cities Service Company, Tulsa, Okla.

Filed Aug. 31, 1978, Ser. No. 938,682
Int. Cl.[3] G01V *1/34*
U.S. Cl. 367—70 2 Claims



1. A method of forming a color display from a sequence in input seismic digital data representing trace oscillations having positive and negative amplitude values wherein colors and their extents are indicative of trace amplitude values comprising the steps of:

(a) processing the sequence of input digital data to obtain a sequence of absolute amplitude values

(b) selecting an absolute amplitude value corresponding to the maximum amplitude for each oscillation, thereby obtaining a sequence of said maximum absolute amplitude values,

(c) classifying a predetermined number of the largest selected absolute amplitude values into a first range of values,

(d) classifying the remaining absolute amplitude values, according to magnitude, into five additional ranges descending in magnitude from said first range,

(e) forming a table in which each range is represented by a primary or secondary color,

(f) processing said sequence of input digital data to obtain a sequence of gain balanced seismic digital data,

(g) processing said sequence of input data to select data

having absolute amplitude values which fall within a first group of said ranges corresponding to a first primary color,

(h) preparing a visual representation of said positive and negative gain balanced data representing trace oscillations corresponding to said selected data,

(i) transferring an image of said visual representation to a sensitized sheet,

(j) desensitizing said sheet except in the region of said image,

(k) coloring said image so transferred with said primary color,

(l) resensitizing said sheet,

(m) in sequence, processing said sequence of input data to select trace amplitudes values which fall within a second group of ranges corresponding to a second primary color and repeating steps (h) through (l),

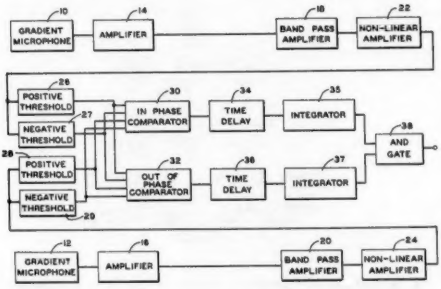
(n) in sequence, processing said sequence of input data to select trace amplitudes values which fall within a third group of ranges corresponding to a third primary color and repeating steps (h) through (k), whereby said primary colors by virtue of random complementary addition operate to generate six colors (three primary and three secondary colors) effective to indicate differing ranges of amplitude values in accordance with the table.

4,279,027

ACOUSTIC SENSOR

Peter H. Van Sloun, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 13, 1979, Ser. No. 75,346
Int. Cl.³ G01S *3/80*
U.S. Cl. 367—125 **5 Claims**



1. Apparatus for locating an acoustic source, comprising:

a first gradient microphone adapted to receive acoustic waves in the first axis and transmit a first signal corresponding to said wave;

a second gradient microphone adapted to receive acoustic waves in a second axis and transmit a second signal corresponding to said wave, second axis being orthogonal to said first axis;

signal processing means receiving said first and said second signals and comparing the phase of said signals, said signal processing means including positive signal means for producing a digital signal when said first or second signal is above a predetermined amplitude and a negative signal means for producing a different digital signal when said first or second signal is below a predetermined amplitude; and,

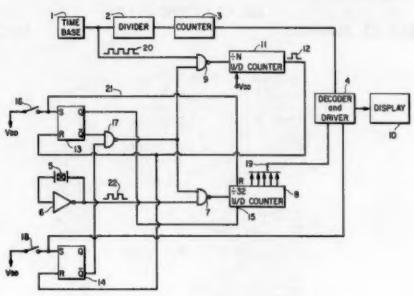
alarm means for producing a signal identifying s change in state of the phase comparison.

4,279,028

WATCH WITH BAROMETRIC PRESSURE INDICATOR

John Lowdenslager, Norwalk, and Alan E. Willis, Stamford, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Oct. 10, 1979, Ser. No. 83,434
Int. Cl.³ G04B *47/00*
U.S. Cl. 368—11 **6 Claims**



3. In combination:

a digital display wristwatch comprising a quartz crystal controlled oscillator for generating a relatively high frequency time standard signal, divider means responsive to the time standard signal to produce low frequency timekeeping signals, counting circuit means responsive to the timekeeping signals adapted to count specific units of time and provide binary coded decimal information signals representative of time, decoder driver means responsive to the binary coded decimal information signals to provide drive signals to said digital display to display digital information correlated to the information signals whereby time information is presented on the digital display; and

an atmospheric pressure variation detecting means comprising an unsealed piezoelectric crystal oscillator circuit for generating barometric pulse signals having a frequency which varies with atmospheric pressure, a first NAND gate having one of its inputs being coupled to said barometric pulse signals and its other input coupled to a control signal output of a second NAND gate for periodically coupling said barometric pulse signals to a counter input terminal of an up/down counter, said up/down counter having a control up/down terminal being responsive to a high-low output state of the Q output of a first flip-flop circuit and the barometric pulse signals to first count-up and subsequently count-down the pulses of said barometric pulse signals to provide a binary code decimal difference signal representative of any frequency variation of said barometric pulse signals to said decoder driver, said first flip-flop circuit includes a Q output connected to one input of said second NAND gate and a reset connected to a reset of a second flip-flop and being connected to a time reference output of an N counter, said first flip-flop having a set terminal connected to a reset of said up/down counter and a first switch means for selectively setting said first flip-flop and resetting said up/down counter, said second flip-flop having a Q output connected to the other input of said second NAND gate and a set terminal connected to said decoder driver and to a second switch means for selectively setting the second flip-flop and enabling the decoder-driver to provide drive signals to display said difference signal, said N counter includes a counter input terminal connected to the output of a third NAND gate having one of its inputs coupled to the output of said time base and its other input connected to the output of said second NAND gate;

whereby said atmospheric pressure variation detecting means responds to a variation in atmospheric pressure a

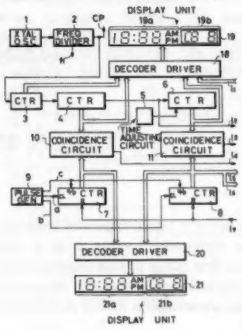
selected time period and is adapted to effect actuation of said digital display to display a digital number being correlated to atmospheric pressure variations.

4,279,029

ELECTRONIC TIMEPIECE

Hajime Oda; Masanori Fujita, and Nakanobu Moritani, all of Tokyo, Japan, assignors to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Oct. 24, 1979, Ser. No. 87,750
Claims priority, application Japan, Oct. 26, 1978, 53/131896
Int. Cl.³ G04B *19/24, 23/02;* **G04C** *9/00*
U.S. Cl. 368—29 **2 Claims**



1. An electronic timepiece comprising:

a first counting circuit for counting time and at least one of date and the days of the week;

a first storage circuit for storing scheduled time and providing a corresponding output;

a first coincidence circuit for detecting the coincidence between time data from the first counting circuit and the output from the first storage circuit;

a second storage circuit for storing at least one from among data representative of the date, the days of the week and data consisting of a predetermined code and providing a corresponding output;

a second coincidence circuit for detecting the coincidence between the data from the second storage circuit and said at least one of date and the days of the week;

a display unit for displaying information representative of the output from the second storage circuit;

an alarm sound signal control means for controlling the occurrence of an alarm sound in response to both outputs of the first and second coincidence circuits;

means for effecting reset of the second storage circuit; and

a control circuit for controlling the reset action of the first and second storage circuits in response to at least an alarm sound stop signal from the alarm sound signal control means.

4,279,030

SPEECH-SYNTHESIZER TIMEPIECE

Sigeaki Masuzawa, Nara, and Mituhiro Saizi, Kyoto, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

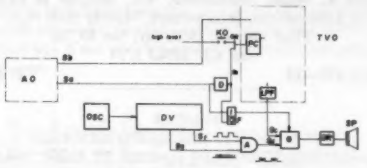
Filed Mar. 26, 1979, Ser. No. 23,754
Claims priority, application Japan, Mar. 25, 1978, 53-34683
Int. Cl.³ G04B *21/08, 21/02*
U.S. Cl. 368—63 **6 Claims**

1. A speech-synthesizer timepiece capable of providing an indication of updated time information, comprising;

audible sound warning signal generating means for developing an audible sound warning signal indicative of a forthcoming development of said indication of updated time information associated with said speech-synthesizer timepiece;

audible sound signal generating means for developing an audible sound signal representative of said indication of updated time information subsequent to the development of said audible sound warning signal by said audible sound warning signal generating means;

means responsive to said audible sound warning signal and to said audible sound signal for generating a first audible sound to provide a warning signal indicative of said forthcoming development of said indication of updated time information in accordance with said audible sound warning signal and for generating a second audible sound subsequent to the generation of said first audible sound and representing said indication of updated time information in accordance with said audible sound signal; and



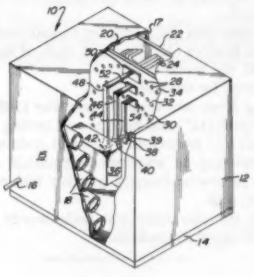
time interval counting means for providing a time count of the elapsed time within a predetermined time interval and for developing an output signal when said time interval counting means counts to the end of said predetermined time interval, said audible sound warning signal generating means developing said audible sound warning signal when the output signal from said time interval counting means is developed.

4,279,031

LUMINOUS CLOCK DISPLAY USING OPTICAL FIBERS

A. S. Dostoomian, Canton, Mass., assignor to Vanzetti Infrared & Computer Systems, Inc., Canton, Mass.

Filed Mar. 14, 1980, Ser. No. 130,290
Int. Cl.³ G04C *19/00;* **G08B** *5/00*
U.S. Cl. 368—82 **7 Claims**



1. A clock having a luminous display, comprising:

(a) an enclosed housing;

(b) a display face visible at one side of the housing;

(c) a stationary light source within the housing;

(d) optical fiber light conductors having first ends disposed in a mounting structure and arranged in annular concentric bands, to receive and conduct light through the optical fiber light conductor to second ends arranged in information patterns on the display face;

(e) a clock motor for providing rotational outputs corresponding to units of time;

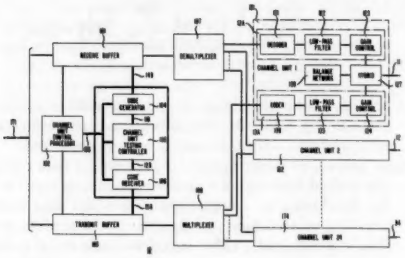
(f) optical filters located between the light source and the first ends of the light conductors, each filter being

mounted on a discrete arm rotatably driven by an output shaft of the clock motor, such arms having lengths such that each filter when rotated traverses a circular path which matches one of the annular concentric bands of the first ends of the light conductors, whereby each filter modifies the light received by the first end of the associated conductors at specific segments of the filter rotation.

4,279,032
CHANNEL BANK LOOP-AROUND TEST ARRANGEMENT AND METHOD

Nicholas K. Smith, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 26, 1979, Ser. No. 33,720
Int. Cl.³ H04J *3/14*
U.S. Cl. 370—15 **27 Claims**



1. A method of testing a PCM channel bank arrangement (10) having

a time division multiplex line (1T1) serving a plurality of PCM channels;

a plurality of analog lines (11–34);

a plurality of channel units (151–174) each coupling one of said PCM channels on said multiplex line (1T1) with one of said analog lines (11) and each having a receive path (12A) wherealong PCM signals are converted to analog signals, a transmit path (13A) wherealong analog signals are converted to PCM signals and a loop-around path (127) coupling said receive and said transmit paths (12A, 13A); and

a testing controller (105) coupled to said transmit path (12A) and said receive (13A) path of each of said channel units (151–74), the method

characterized by the steps of

circulating from said testing controller (105) via said loop-around path (127) and back to said testing controller (105) a sequence of prescribed PCM test code words, each said word defining an amplitude magnitude of a waveform having piecewise linearly positive and negative sloping portions; and

evaluating the circulated test code words for undesirable levels of signal degradation.

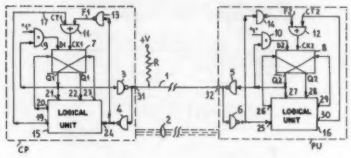
4,279,033
BIDIRECTIONAL TRANSMISSION CIRCUIT FOR INTERLOCKED SIGNALS

Romeo Brunelli, Milan, and Angelo Casamatta, Cornaredo, both of Italy, assignors to Honeywell Information Systems Italia S.p.A., Milan, Italy

Filed Mar. 22, 1979, Ser. No. 23,050
Claims priority, application Italy, Mar. 23, 1978, 21510 A/78
Int. Cl.³ H04L *5/14*
U.S. Cl. 370—29 **5 Claims**

1. Circuit for the bidirectional transmission of signals, at least partially interlocked, between two units connected by means of a signal transmission means, said transmission means being terminated in one of the two units with first means for applying to said trasmissions means either one of two statuses, representative of two logical levels and with second means to detect the status of said transmission means and to provide an indication of said status, In the second unit the transmission means being terminated with a third meahs for applying to said transmission means either one of the said statuses, and with a fourth means for detecting the status of said transmission means and for providing an indication of said status, the first of said two statuses being taken by the said transmission means only when the said status is concurrently set by said first and third means, the second of said two statuses being taken by said transmission means when the said second status is set by either the first or third means only, comprising:

a first bistable element for the control of the said first means and capable of assuming a first logical status as a consequence of a control signal received from said first unit, of causing the application, when it is in this first logical status, of said first status to said transmission means, and of resuming a second logical status in response to a change of status of said transmission means detected by said second means, and

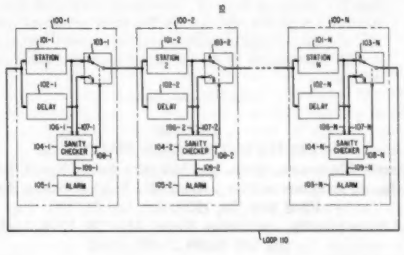


a second bistable element for the control of said third means, capable of assuming a first logical status in response to a status change of said transmission means, detected by said fourth means, and capable of causing the application, when it is in said first logical status, by said third means of the said second status to said transmission means, and further capable to assume a second logical status as a consequence of a reset command generated in said second unit.

4,279,034
DIGITAL COMMUNICATION SYSTEM FAULT ISOLATION CIRCUIT

Leslie A. Baxter, Eatontown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 15, 1979, Ser. No. 94,494
Int. Cl.³ H04Q *9/00*; G08C *25/00*
U.S. Cl. 371—8 **5 Claims**



1. A fault isolation circuit for use in a digital loop communication system having a plurality of stations, each station interconnected with a next preceding and a next succeeding station over a digital communication path, said stations separated into groups, each group containing at least one said station,

said isolation circuit including

delay means having a bit propagation delay time equal to the

bit propagation time of the combination of said associated group of stations,

means for propagating through said delay means data bits appearing at the input of said associated group of stations,

means for comparing the output bits from said group of stations with said propagated delayed bits, and

error detector means responsive to a detected error between said compared bits for isolating said output bits from said communication path and for substituting said propagated delayed bits on said communication path in place of said isolated bits.

4,279,035

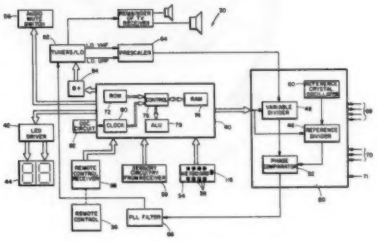
CHANNEL NUMBER ENTRY SYSTEM

Peter C. Skerlos, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Dec. 27, 1979, Ser. No. 107,805

Int. Cl.³ H04B *1/16;* H04N *5/50*

U.S. Cl. 455—158 **11 Claims**



1. In a television receiver tuning system controlled by a microcomputer wherein channel selection is by means of a keyboard including a plurality of selectable digit keys for generating binary signals representing television channel numbers with said binary signals being transmitted to said microcomputer for display on a digital display, for storage in a matrix memory in said microcomputer, and for controlling television receiver tuning circuitry, and a selectable enter key for tuning in a selected channel, a method of selecting a desired channel number by which the possibility of an erroneous channel number entry is reduced, said method comprising the steps of:

selecting the desired channel number by actuating said selectable digit keys on said keyboard and displaying the selected channel number on said digital display;

storing the selected channel number in said matrix memory in said microcomputer for a predetermined period of time;

actuating said enter key; and

transmitting said selected channel number to tuning circuitry in said television receiver for tuning said television receiver to said selected channel number and retaining in said digital display the selected channel number if said enter key is selected within said predetermined period of time; or

removing the selected channel number from memory storage in said microcomputer and from said digital display while remaining tuned to a currently tuned channel if said enter key is not selected within said predetermined period of time.

4,279,036

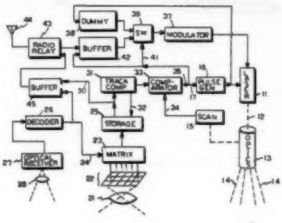
SECURE COMMUNICATION SYSTEM

Charles E. Pfund, 16 Balcarres Rd., West Newton, Mass.

Filed Jul. 2, 1962, Ser. No. 206,766

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—606 **17 Claims**



1. Apparatus for communicating with a mobile vehicle comprising means for transmitting a laser beam toward an orbiting satellite from a vehicle within the portion of the earth's surface beneath said satellite, means for detecting said laser beam received at said satellite to determine the angular orientation of said vehicle from said satellite, means for utilizing the angular orientation data so obtained to establish a narrow beam communication link from said satellite to said vehicle, and means for communicating with said vehicle from a remote point via said satellite and said narrow beam communication link.

259,820

POCKET FOR JEANS OR THE LIKE

Martin Heinfling, Bayside, N.Y., assignor to Englishtown Sportswear, Ltd., New York, N.Y.

Filed May 5, 1980, Ser. No. 146,851

Term of patent 14 years

Int. Cl. D2—*02*

U.S. Cl. D2—28

259,821

SWIMSUIT

Jacquelyn A. B. Myles, 1427 Newton Ave., Dayton, Ohio 45406

Continuation-in-part of Ser. No. 669,619, Mar. 22, 1976, abandoned. This application Jan. 12, 1979, Ser. No. 3,129

Term of patent 14 years

Int. Cl. D2—*02*

U.S. Cl. D2—40

259,822

SHOE

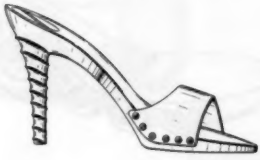
Renate M. Melzi, and Edward R. Melzi, both of 3310 Ivanhoe La., Garland, Tex. 75042

Filed Jul. 11, 1979, Ser. No. 56,509

Term of patent 14 years

Int. Cl. D2—*04*

U.S. Cl. D2—283



259,823

SHOE SOLE

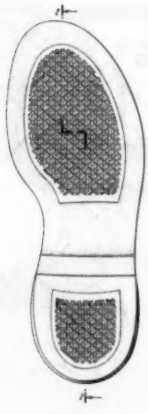
James V. Greenlee, Wausau, Wis., assignor to Bata Shoe Company, Inc., Belcamp, Md.

Filed Aug. 15, 1979, Ser. No. 66,799

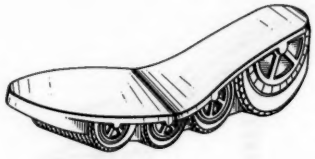
Term of patent 14 years

Int. Cl. D2—*04*

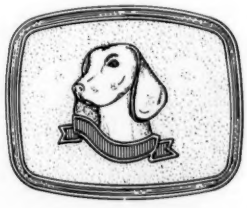
U.S. Cl. D2—320



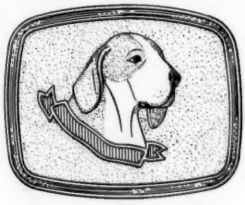
259,824
SHOE SOLE
Ralph Shanks, and Ralph Shanks, Jr., both of 4448 Sigma Rd., Suite 101, Dallas, Tex. 75240
Filed Dec. 26, 1978, Ser. No. 973,547
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—321



259,825
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,412
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440

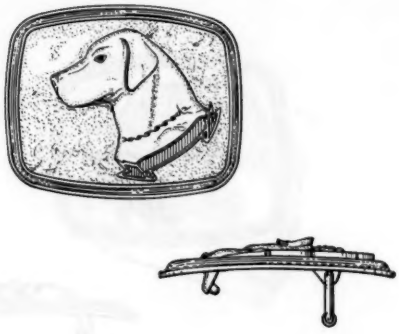


259,826
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,413
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440

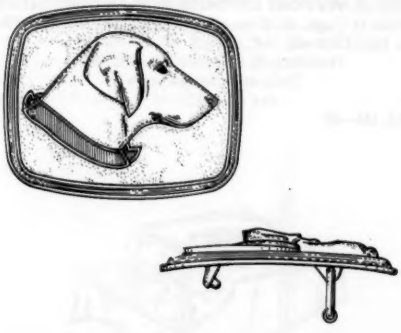


259,827
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,414
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440

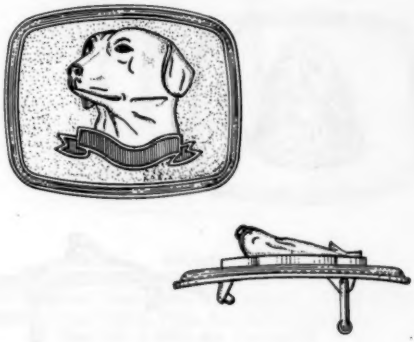
259,828
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,415
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440



259,829
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,416
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440

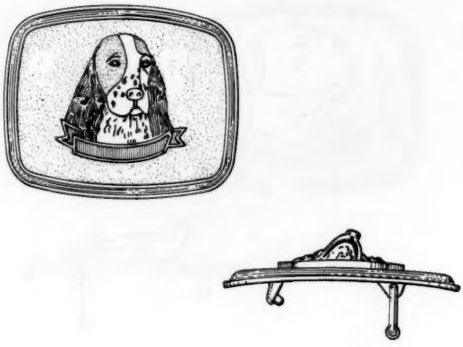


259,830
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,423
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440

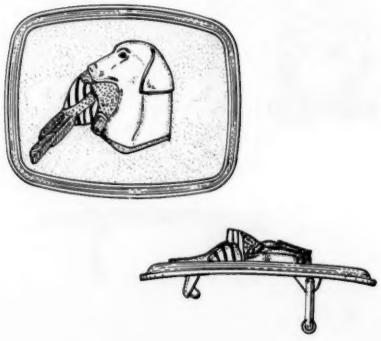


259,831
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,424
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440

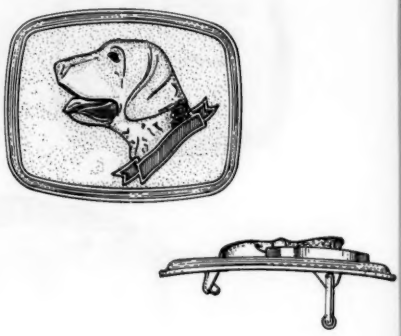
259,832
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,425
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440



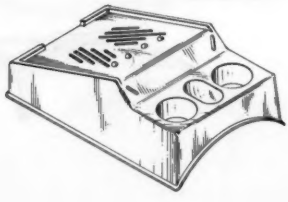
259,833
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,426
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440



259,834
BELT BUCKLE (SHORTHAIR)
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,428
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440

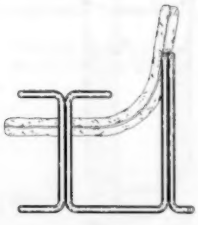


259,835
ARTICLE SUPPORT CONSOLE FOR AUTOMOBILES
Cornelius D. Page, Jr., Gastonia, N.C., assignor to Allied Plastics, Inc., Gastonia, N.C.
Filed Aug. 9, 1978, Ser. No. 932,685
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D3—40

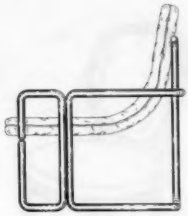


259,836
LUGGAGE BAG
Louis Schneider, Landsham, and Hans A. Muth, Hechendorf, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Mar. 14, 1979, Ser. No. 20,320
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 11455
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

259,837
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Continuation-in-part of Ser. No. 677,613, Apr. 16, 1976. This application Jul. 5, 1978, Ser. No. 922,177
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



259,838
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Continuation-in-part of Ser. No. 677,614, Apr. 16, 1976. This application Jul. 5, 1978, Ser. No. 922,179
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69

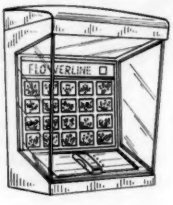


259,839
CHAIR
Jobie G. Redmond, High Point, N.C., assignor to Jack Daniel Distillery, Lem Motlow, Prop., Inc., Lynchburg, Tenn.
Filed Nov. 8, 1978, Ser. No. 958,844
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70

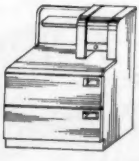
259,840
THROW CUSHION CHAIR
Jobie G. Redmond, High Point, N.C., assignor to Jack Daniel Distillery, Lem Motlow, Prop., Inc., Lynchburg, Tenn.
Filed Nov. 8, 1978, Ser. No. 958,847
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70

259,841
CHAIR
Marcello Mioni, 11044 Strathmore, Westwood, Calif. 90024
Filed Aug. 7, 1978, Ser. No. 932,106
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—74

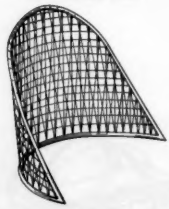
259,842
COMBINED MERCHANDISE ADVERTISING AND TELEPHONE ORDER BOOTH
Paul S. Kostoff, 19323 Parke La., Grosse Ile, Mich. 48138
Filed Sep. 28, 1978, Ser. No. 946,852
Term of patent 14 years
Int. Cl. D20—*02*; D25—*03*
U.S. Cl. D6—130



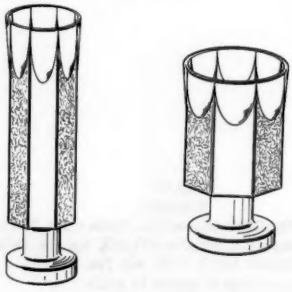
259,843
BEDSIDE TABLE
Esperia Murphy, P.O. Box 952, Vienna, Va. 22180
Filed Oct. 30, 1978, Ser. No. 955,699
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—163

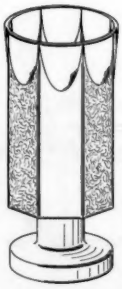


259,844
CHAIR BACK
Donald E. Hanaford, 4601 S. 35th St., Phoenix, Ariz. 85040
Filed Oct. 16, 1978, Ser. No. 951,449
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197



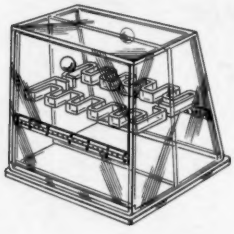
259,845
GOBLET OR SIMILAR ARTICLE
Timo Sarpaneva, Helsinki, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Oct. 10, 1978, Ser. No. 949,795
Claims priority, application Finland, May 3, 1978, 275
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—11





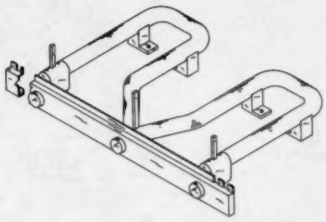
259,846
BEVERAGE CUP
Alain D. Perrin, Rueil Malmaison, France, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Feb. 23, 1979, Ser. No. 14,759
Claims priority, application Hague, Aug. 29, 1978, 67448
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—15

259,847
FLATWARE RACK
Robert L. Hamby, Dodge City, Kans., assignor to Leo L. Carrick and Della Carrick, both of Fort Collins, Colo.
Filed Mar. 27, 1979, Ser. No. 24,328
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—74

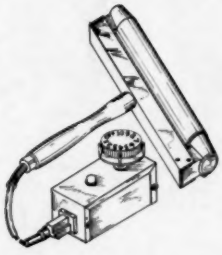


259,848
DEVICE WHICH IS SUITABLE FOR USE IN CLEANING MAGNETIC HEADS OF MAGNETIC TAPE RECORDING AND/OR PLAYBACK INSTRUMENTS
William C. Westran, Seaford, England, assignor to Bib Hi-Fi Accessories Limited, Hemel Hempstead, England
Filed Dec. 15, 1978, Ser. No. 969,791
Claims priority, application United Kingdom, Oct. 10, 1978, 986771/78
Term of patent 14 years
Int. Cl. D7—*05*; D4—*01*
U.S. Cl. D7—161

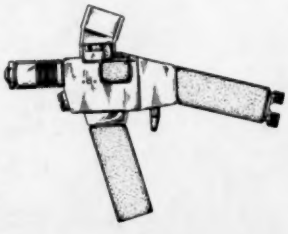
259,849
ANDIRON
Richard B. Estes, 20 Sandra La., Athens, Ala. 35611
Filed Apr. 18, 1978, Ser. No. 897,657
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—211



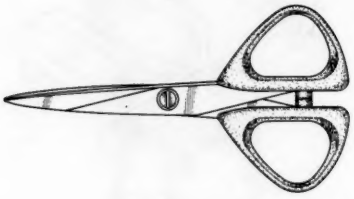
259,850
COMBINED HEAT APPLYING ROLLER AND CONTROL DEVICE THEREFOR
Rubin Feldman, 46 Rio Vista Dr., St. Louis, Mo. 63124; Wilbur Paddock, 7705 Underhill Dr., St. Louis, Mo. 63133, and James S. Eiteljorg, 1214 Orchard Village, Ballwin, Mo. 63011
Filed Jul. 21, 1977, Ser. No. 817,840
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



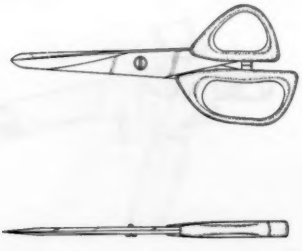
259,851
FLAME SPRAYING TORCH
Daniel Audemars, Echanchens; Wolfgang Simm, Lausanne, and Hans-Theo Steine, Crissier, all of Switzerland, assignors to Castolin S.A., Vaud, Switzerland
Filed Jul. 19, 1978, Ser. No. 926,219
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



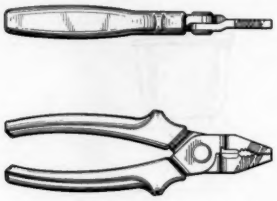
259,852
SCISSORS
Naoyoshi Machida, Seki, Japan, assignor to Kai Cutlery Center Co., Ltd., Seki, Japan
Filed Jan. 29, 1979, Ser. No. 7,642
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—57



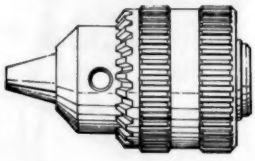
259,853
SCISSORS
Naoyoshi Machida, Seki, Japan, assignor to Kai Cutlery Center Co., Ltd., Seki, Japan
Filed Jan. 29, 1979, Ser. No. 7,643
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—57



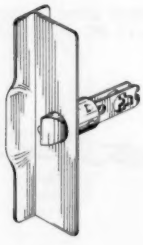
259,854
ENGINEERS' PLIERS
Ulf H. Wahlberg, Enköping, Sweden, assignor to Aktiebolaget Bahco Verktyg, Enköping, Sweden
Filed Sep. 29, 1977, Ser. No. 837,947
Claims priority, application Sweden, May 2, 1977, 770987
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—58



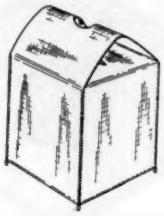
259,855
DRILL CHUCK
George C. Derbyshire, Sheffield, England, assignor to The Jacobs Manufacturing Co., Ltd., Sheffield, England
Filed Aug. 17, 1978, Ser. No. 934,524
Claims priority, application United Kingdom, May 26, 1978, 984831/78
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—68



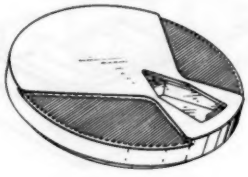
259,856
COMBINED DOOR LOCK BOLT AND COVER PLATE
David M. Ciener, P.O. Box 288M, Geneva, Fla. 32732
Filed Jan. 15, 1979, Ser. No. 3,112
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—331



259,857
CONTAINER FOR BULK MATERIALS
Frank Nattrass, Knaresborough, England, assignor to Lolift Limited, England
Filed Sep. 8, 1977, Ser. No. 831,693
Claims priority, application United Kingdom, Mar. 8, 1977, 979164/77
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—432



259,858
PILL BOX
Henry Finkel, 342 Elm Ave., Westmount, Quebec, Canada (H3Z 1Z5)
Filed Dec. 26, 1978, Ser. No. 972,652
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—418



259,859
CONTAINER FOR LIQUIDS
John C. Tibbles, 85 Ngaio Gorge Rd., Wellington, New Zealand
Filed Jul. 3, 1978, Ser. No. 922,167
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—432

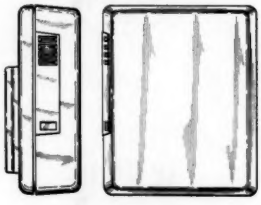
259,860
CARTON
Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 21, 1978, Ser. No. 944,465
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—432

259,861
CAP FOR DISPENSING DISINFECTANTS
Clayton N. Hirtle, 44332 Balch Park Dr., Springville, Calif. 93265
Filed Apr. 3, 1980, Ser. No. 136,810
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—450

259,862
COMBINED ELECTRONIC CLOCK AND MIRROR
Chi T. You, 71-73, Pou Hsin Rd., Hsin Den Tjen, Taipei Hsien, Taiwan, Taiwan
Filed Nov. 28, 1978, Ser. No. 964,175
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—2

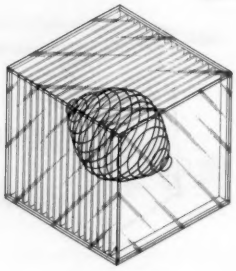
259,863
COMBINED AIR PRESSURE GAUGE AND DUAL TIRE AIR FILLING DEVICE
Chauncey B. Eller, 23100 Vista Grande Way, Colton, Calif. 92324
Filed Jul. 17, 1978, Ser. No. 925,223
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—86

259,864
CASE FOR AUDIBLE SIGNAL GENERATOR FOR ENURESIS PREVENTION TRAINING DEVICE
Joe W. Snyder, Dundee, Oreg., assignor to Nite Train-R Enterprises, Inc., Newberg, Oreg.
Filed Nov. 13, 1978, Ser. No. 959,652
Term of patent 3½ years
Int. Cl. D10—*05*
U.S. Cl. D10—116

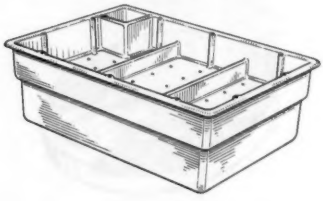


259,865
RADIATION-SENSITIVE PENDULUM TO BE HELD IN THE HAND
Michel Struby, 150 A, route d'Hermance, CH-1245 Collonge-Bellerive, Geneva, Switzerland
Filed Sep. 20, 1978, Ser. No. 944,209
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—47

259,866
DISAPPEARING SPHEROID DISPLAY
Karen G. A. Mortillaro, 8652 Salt Lake Dr., Huntington Beach, Calif. 92646
Filed Jan. 2, 1979, Ser. No. 111
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—131



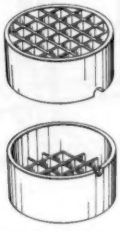
259,867
HYDROPONIC GARDENING TRAY
Stewart T. Kenyon, 1134 Yonge St., Toronto, Ontario, Canada (M4W 2L8); Walter C. Kenyon, Toronto, and Helmut D. Julinot, Baltimore, both of Canada, assignors to Stewart T. Kenyon, Toronto, Canada
Filed Jan. 22, 1980, Ser. No. 114,175
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—155



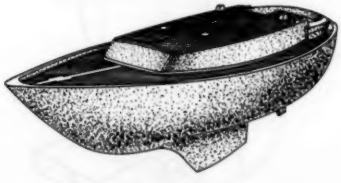
259,868
PLANTER
Helmut D. Julinot, Baltimore, Canada, assignor to Stewart Kenyon, Toronto, Canada
Filed Apr. 9, 1979, Ser. No. 28,157
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—156

259,869
HORSEMAN FIGURE
Charles A. MacLean, 23073 Beech, Dearborn, Mich. 48124
Filed Apr. 25, 1979, Ser. No. 33,126
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—159

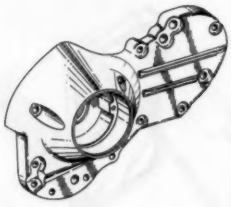
259,870
SUPPORT TO HOLD POTTED PLANTS ABOVE WATER LEVEL
Thomas L. Marantette, 6119 E. Gold Dust, Scottsdale, Ariz. 85253
Filed Dec. 26, 1979, Ser. No. 107,333
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—164



259,871
BOAT
William I. B. Crealock, 1401 Forest Ave., Carlsbad, Calif. 92008
Filed Feb. 23, 1978, Ser. No. 881,158
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—303

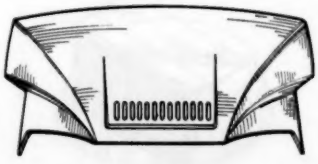


259,872
COVER PLATE FOR A MOTORCYCLE CRANK CASE
Donald G. Ramsey, 962 Cornell Ave., Youngstown, Ohio 44502
Filed Sep. 18, 1978, Ser. No. 943,291
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—126

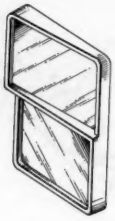


259,873
GRILL GUARD FOR VANS
William J. Milner, Pleasantville, Iowa 50225
Filed Jul. 24, 1978, Ser. No. 927,115
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—171

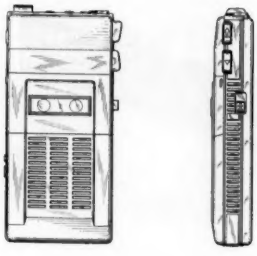
259,874
TRACTOR-TRAILER AERODYNAMIC DRAG REDUCER
Giuseppe Ferrero, Turin, Italy, assignor to Fiat Veicoli Industriali S.p.A., Turin, Italy
Filed Feb. 27, 1979, Ser. No. 15,843
Claims priority, application Italy, Sep. 22, 1978, 53724/78[U]
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181



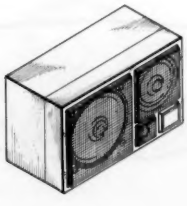
259,875
AUTOMOBILE AND TRUCK REAR VIEW MIRROR
Walter E. Hanson, 85 Arden Dr., Newport News, Va. 23601
Filed May 8, 1980, Ser. No. 148,189
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



259,876
TAPE RECORDING MACHINE
Arthur J. Pulos, Fayetteville, and Michael Cridland, Manlius, both of N.Y., assignors to Dictaphone Corporation, Rye, N.Y.
Filed Dec. 11, 1978, Ser. No. 968,114
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6

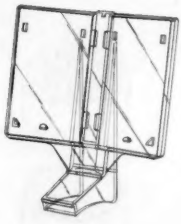


259,877
LOUDSPEAKER ENCLOSURE
Charles Barbera, 303 E. Elk St., Glendale, Calif. 91205
Filed Sep. 5, 1978, Ser. No. 939,899
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—34

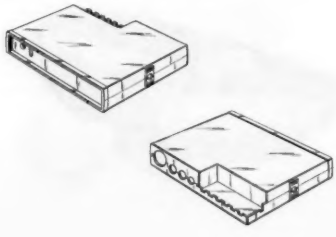


259,878
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed Dec. 13, 1978, Ser. No. 969,051
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

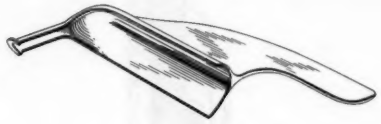
259,879
DISPLAY STAND FOR TELEPHONE ATTACHMENT
Irwin Pearl, Lido Beach, N.Y., assignor to Business Concepts Marketing Corporation, Island Park, N.Y.
Filed Oct. 2, 1978, Ser. No. 947,934
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—60



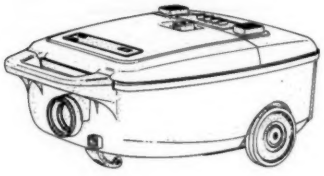
259,880
BRACKET MOUNTED MOTOR VEHICULAR RADIO RECEIVER HOUSING OR SIMILAR ARTICLE
Keisuke Iwata, Tokyo, Japan, assignor to Iwata Electric Co., Ltd., Japan
Filed Jul. 23, 1979, Ser. No. 59,988
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



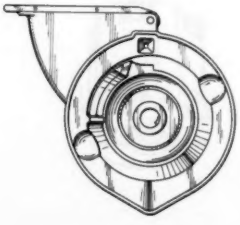
259,881
SCREW PROPELLOR PROTECTION DEVICE FOR BOATS
Michael R. Corboy, 13 Locksley Ave., Reservoir, Victoria, 3073, Australia
Filed Feb. 7, 1979, Ser. No. 9,873
Claims priority, application Australia, Aug. 9, 1978, 755040
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—4



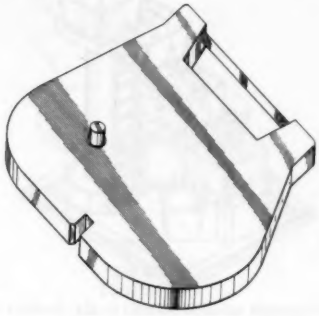
259,882
VACUUM CLEANER
Toshihiko Yoshida, Suita, and Noriharu Furuyabu, Ashiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Dec. 12, 1978, Ser. No. 968,669
Claims priority, application Japan, Jun. 14, 1978, 53-25008
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—52



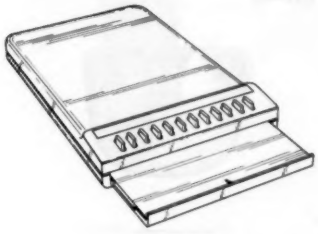
259,883
VEGETABLE SLICER HOUSING
Einar O. Engebretsen, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio
Filed Dec. 21, 1978, Ser. No. 971,950
Term of patent 14 years
Int. Cl. D15—*08*; D7—*04*
U.S. Cl. D15—97



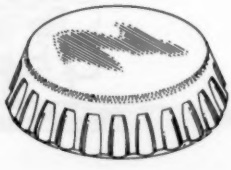
259,884
RIBBON CARTRIDGE
Morton L. Havey, Dallas, and Richard N. Pufpaff, Irving, both of Tex., assignors to Recognition Equipment Incorporated, Dallas, Tex.
Filed Aug. 30, 1978, Ser. No. 938,137
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—12



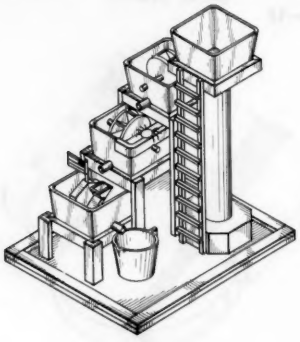
259,885
TELEPHONE INDEX
Hans Haim, Herne, Fed. Rep. of Germany, assignor to Confon AG, St. Gallen, Switzerland
Filed May 9, 1979, Ser. No. 37,336
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



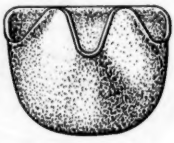
259,886
PAPERWEIGHT OR SIMILAR ARTICLE
Robert M. Yates, Independence, Ohio, assignor to Michael Yates Carved Crystal, Inc., Cleveland, Ohio
Filed Oct. 19, 1977, Ser. No. 843,644
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—97



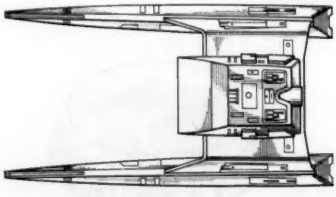
259,887
WATER TOY
James F. Croushore, 43 E. Second Ave., Latrobe, Pa. 15650
Filed Oct. 16, 1978, Ser. No. 952,001
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59



259,888
HAND MANIPULATIVE AQUATIC TOY
Robert A. Bantin, Little Valley, and Dean R. Kilbourn, Salamanca, both of N.Y., assignors to BKB Industries, Inc., Little Valley, N.Y.
Division of Ser. No. 853,637, Nov. 21, 1977, which is a continuation-in-part of Ser. No. 811,995, Jun. 30, 1977. This application Feb. 21, 1980, Ser. No. 123,124
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

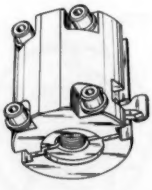


259,889
TOY SPACESHIP
Andrew G. Probert, El Segundo, Calif., assignor to Paramount Pictures Corporation, Los Angeles, Calif.
Filed Apr. 13, 1979, Ser. No. 29,928
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—87

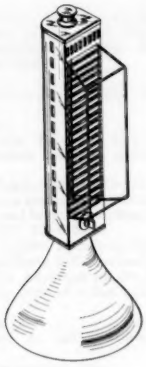


259,890
DOLL
Fannie B. West, 595 W. 91st Ave., Apt. 106, Denver, Colo. 80221
Filed Dec. 18, 1978, Ser. No. 970,816
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—166

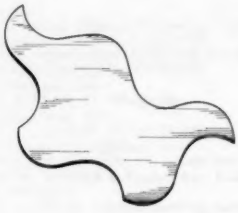
259,891
VALVE STEM CONNECTOR AND STRAIN INDICATOR
George R. Ogniewski, 3241 New York Ave., Costa Mesa, Calif. 92626
Filed Oct. 23, 1978, Ser. No. 953,976
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



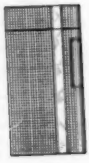
259,892
FREE STANDING SPACE HEATER
Konrad M. Boekamp, P.O. Box 2456, La Mesa, Calif. 92041
Filed Oct. 2, 1978, Ser. No. 948,031
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—122



259,893
FLOOR TILE
Bruno Fidel, 2692 86 St., Brooklyn, N.Y. 11223
Filed Dec. 26, 1978, Ser. No. 973,021
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



259,894
LIGHTER
Jean-Michel Collaud; Albert Girella; Maurice Herren; Niklaus Muller, and Roger Piola, all of Geneva, Switzerland, assignors to Caran D'Ache SA, Thonex, Switzerland
Filed Mar. 17, 1978, Ser. No. 888,686
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF JULY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Celleco: *See*—
Jakobson, Karl F. O., 4,278,534, Cl. 209-211.000.

Abatjoglou, Anthony G., to Union Carbide Corporation. Osmium catalyzed hydroxylation of olefins with selenoxide cooxidants. 4,278,517, Cl. 204-158.00R.

Abcor, Inc.: *See*—
Jakabhazy, Stephen Z.; and Patel, Laxmidas R., 4,278,777, Cl. 525-276.000.

Abe, Hidetoshi: *See*—
Mukoh, Akio; Abe, Hidetoshi; Kawakami, Hideaki; Nagae, Yoshiharu; Morishita, Hirosada; and Kaneko, Eiji, 4,278,328, Cl. 350-349.000.

Abe, Kazuhiro, to Tokyo Shibaura Electric Co., Ltd. Electronic calculation/memorandum apparatus. 4,279,022, Cl. 364-900.000.

Abrams, Joseph L.; and Maynard, Arthur D. Magnetic conditioning of liquids. 4,278,549, Cl. 210-695.000.

Abramson, Roger; Delisle, Jean-Paul; Elie, Xavier; Salon, Guy; and Peyrelongue, Jean-Pierre, to Commissariat a l'Energie Atomique; and Stein Industrie S.A. Apparatus for the purification of a liquid metal for cooling in the core of a fast neutron reactor. 4,278,499, Cl. 176-37.000.

ACF Industries, Inc.: *See*—
Dugge, Richard H.; and Schlobohm, Arnold, 4,278,107, Cl. 137-526.000.

Acme-Cleveland Corporation: *See*—
Goss, Harold R.; and Rebish, Edward J., 4,278,123, Cl. 164-28.000.

Acme General Corporation: *See*—
Ford, Harold H., 4,278,196, Cl. 229-30.000.

ACR Electronics, Inc.: *See*—
Pelino, William M., 4,278,979, Cl. 343-703.000.

Adams, Mark B., to University of Utah. Gradient tube rack and method. 4,278,176, Cl. 211-74.000.

AE Development Corporation: *See*—
Prussin, Samuel B., 4,278,206, Cl. 239-327.000.

Aerochem Research Laboratories, Inc.: *See*—
Calcote, Hartwell F.; and Olson, Douglas B., 4,278,441, Cl. 23-232.00E.

AGA Aktiebolag: *See*—
Wiklund, Klas R., 4,277,895, Cl. 33-366.000.

Agency of Industrial Science and Technology: *See*—
Kono, Hidehiko, 4,278,142, Cl. 180-168.000.

AGFA-Gevaert A.G.: *See*—
Saleck, Wilhelm; Wolff, Erich; and Muller, Erwin, 4,278,759, Cl. 430-627.000.

Agraz-Guerena, Jorge; Katz, Lewis E.; and Morris, Bernard L., to Bell Telephone Laboratories, Incorporated. Sequentially annealed oxidation of silicon to fill trenches with silicon dioxide. 4,278,705, Cl. 427-93.000.

Ahearn, Thomas M. Garbage container truck. 4,278,390, Cl. 414-549.000.

Ahlborn, Gunther; Fiedler, Eberhard; Hubsch, Henry; and Kramer, Rolf, to Waggon Union GmbH. Truck for high speed rail cars. 4,278,030, Cl. 105-208.100.

Ahlers, Egon, to Seitz-Werke GmbH. Control arrangement, especially for apparatus for closing containers such as bottles. 4,277,928, Cl. 53-67.000.

Ahlstrom, Allan. Vending machine. 4,278,182, Cl. 221-5.000.

Ahmad, Abu, to Owens-Corning Fiberglas Corporation. Dispensing foamable material. 4,278,045, Cl. 118-323.000.

Ahouse, David R.; Daugherty, Jack D.; Glickler, Sheldon L.; Kellen, Paul F.; Sutton, George W.; Korff, David; and Yoder, Marvel J., to United States of America, Air Force. Electro-dynamic laser with acoustic absorbing electrode. 4,278,950, Cl. 331-94.50G.

Aichhorn, Anton: *See*—
Helletsberger, Harald; Aichhorn, Anton; and Bogusch, Erich, 4,278,449, Cl. 51-309.000.

Aigner, Hansjorg: *See*—
Dworak, Gert; and Aigner, Hansjorg, 4,278,574, Cl. 260-22.0CB.

Aikoh, Co., Ltd.: *See*—
Takashima, Masaru, 4,278,544, Cl. 210-503.000.

Ailloud, Jean; and Monteil, Marcel, to Commissariat a l'Energie Atomique. Pressurized water reactor. 4,278,500, Cl. 176-37.000.

Air Products and Chemicals, Inc.: *See*—
Longsworth, Ralph C., 4,277,949, Cl. 62-54.000.
Longsworth, Ralph C., 4,277,951, Cl. 62-55.500.

Aisin Seiki Kabushiki Kaisha: *See*—
Hayashi, Masaharu, 4,278,160, Cl. 192-82.00T.

Ajima, Shigetoshi: *See*—
Noguchi, Kazuo; Fujimaki, Hiroto; Tagaya, Kiyoshi; Ajima, Shigetoshi; Takada, Kazutoshi; and Okuda, Kensuke, 4,278,584, Cl. 260-38.000.

Akahira, Nobuo: *See*—
Ohta, Takeo; Akahira, Nobuo; Nakamura, Tatsushi; and Yamashita, Tadaoki, 4,278,734, Cl. 428-432.000.

AKG Akustische u. Kino-Gertate Gesellschaft m.b.H.: *See*—
Gorike, Rudolf, 4,278,852, Cl. 179-182.00R.

Aladdin Toy Motors, Inc.: *See*—
Gittler, Max, 4,278,149, Cl. 185-39.000.

Albany International Corp.: *See*—
Mellen, Jerre L., 4,278,497, Cl. 162-252.000.

Alchaldean International Pty. Limited: *See*—
Maniquis, Dux C. L., 4,278,543, Cl. 210-403.000.

Alessio, Lorenzo E., to Black & Decker Inc. Foldable workbench. 4,278,243, Cl. 269-16.000.

Ali, Christopher A.; and Ali, Frank F. Sanding, buffing and/or polishing wheel. 4,277,917, Cl. 51-335.000.

Ali, Frank F.: *See*—
Ali, Christopher A.; and Ali, Frank F., 4,277,917, Cl. 51-335.000.

Allcock, Harry R.; Allen, Robert W.; and O'Brien, John P., to Research Corporation. Complex or salt of a platinum (II) compound and a nitrogen containing polymer. 4,278,660, Cl. 424-78.000.

Allen & Hanburys Limited: *See*—
Hartley, David; and Oxford, Alexander W., 4,278,673, Cl. 424-249.000.

Allen, Hanceford L.; and Berry, William W., to International Minerals & Chemical Corporation. Method for solvent extraction of metallic mineral values from acidic solutions. 4,278,640, Cl. 423-10.000.

Allen, Jerome D.: *See*—
Wood, Loren E.; Allen, Jerome D.; Clift, Miner E.; Kays, Jerry W.; and Forsythe, Calvin C., 4,278,181, Cl. 220-89.00A.

Allen, Luther. Automotive anti-theft system. 4,278,963, Cl. 340-64.000.

Allen, Paul E., to Logic Devices, Inc. Cooling system for plastic molds. 4,278,230, Cl. 249-81.000.

Allen, Robert W.: *See*—
Allcock, Harry R.; Allen, Robert W.; and O'Brien, John P., 4,278,660, Cl. 424-78.000.

Allied Chemical Corporation: *See*—
Yee, Kwok C., 4,278,561, Cl. 252-408.000.

Alloy Engineering Company, The: *See*—
Freund, William P.; and Hulvey, Stephen R., 4,278,242, Cl. 266-263.000.

Alpers, Frederick C.; and Hecker, Klaus J., to United States of America, Navy. Remote sensing device. 4,278,976, Cl. 343-6.50R.

Alpha Solarco Inc.: *See*—
Uroshevich, Miroslav, 4,278,074, Cl. 126-444.000.

Alpine Aktiengesellschaft: *See*—
Schmidt, Uwe; and Schneider, Dieter, 4,278,537, Cl. 209-469.000.

Aluminum Company of America: *See*—
Hawkins, Ronald G., 4,278,833, Cl. 174-42.000.
Willis, Wilburn C., 4,278,180, Cl. 215-252.000.

Alvarez, Francisco S., to Syntex (U.S.A.) Inc. 3-Oxo-4-halo-16β-methylandrost-4-ene 17β-carboxylic acids and esters. 4,278,669, Cl. 424-243.000.

Alza Corporation: *See*—
Theeuwes, Felix, 4,278,087, Cl. 128-260.000.

Amchem Products, Inc.: *See*—
Reinhold, Earl R., 4,278,477, Cl. 148-6.14R.

American Cyanamid Company: *See*—
Granzow, Albrecht H., 4,278,588, Cl. 260-45.70P.
Granzow, Albrecht H., 4,278,591, Cl. 260-45.75D.
Murdock, Keith C., 4,278,605, Cl. 260-367.000.
Murdock, Keith C.; and Durr, Frederick E., 4,278,689, Cl. 424-330.000.
Pfeiffer, Ronald E., 4,278,415, Cl. 425-466.000.
Song, John, 4,278,577, Cl. 260-23.00H.
Wissner, Allan, 4,278,806, Cl. 560-121.000.
Zwick, Maurice M.; and van Loo, William J., 4,278,634, Cl. 264-168.000.

American Electronic Laboratories, Inc.: *See*—
Klopach, Robert T.; and Hartman, Rickey E., 4,278,933, Cl. 324-58.00R.

American Home Products Corporation: *See*—
Garsky, Victor M., 4,278,596, Cl. 260-112.50R.

American Hospital Supply Corporation: *See*—
Borsanyi, Alexander S.; Ivanovich, Peter; and Vaughan, Urte, 4,278,092, Cl. 128-348.000.

American Optical Corporation: *See*—
Buhler, Rato R., 4,277,916, Cl. 51-217.00L.
Dick, Harold R., 4,277,891, Cl. 30-316.000.
Rosen, Julius S., 4,278,263, Cl. 279-1.00R.

American Technology, Inc.: *See*—
Lafortune, Ray; and Heeb, Waldemar, 4,278,093, Cl. 128-419.00P.

Ametek, Inc.: *See—*
Bowen, John C., 4,278,070, Cl. 126-417.000.

AMF Incorporated: *See—*
Hou, Kenneth C.; and Kilty, Michael F., 4,278,551, Cl. 210-767.000.

AMI Industries, Inc.: *See—*
Milholen, William F., 4,278,378, Cl. 414-32.000.

Ammermann, Eberhard: *See—*
Rentzea, Costin; Sauter, Hubert; Ammermann, Eberhard; Heilen, Gerd; and Jung, Johann, 4,278,800, Cl. 548-262.000.

AMP Incorporated: *See—*
Moser, Jesse L.; and Shoemaker, John R., 4,278,314, Cl. 339-99.00R.
Scheingold, William S.; and Youngfleish, Frank C., 4,278,311, Cl. 339-17.0CF.

Amrani, David. Process for separation and isolation of AHF, von Willebrand's ristocetin cofactor (VWF:RCF) and fibronectin from blood plasma. 4,278,594, Cl. 260-112.00B.

Amstar Corporation: *See—*
Eis, Frederick G.; Bonney, Oren V.; and Sackett, Willard A., 4,278,541, Cl. 210-112.000.

Anaconda-Ericsson Inc.: *See—*
Hestad, Alfred M., 4,278,843, Cl. 179-18.0BC.

Anderson, Edward A.; Rawls, Rose M.; and Tull, James A., to Hughes Aircraft Company. Organic acid activated liquid solder flux. 4,278,479, Cl. 148-23.000.

Anderson, Ronald L.; and Kessler, Harry T., Jr. Husking machine. 4,278,097, Cl. 130-5.00D.

Anderson, Stephen W. Apparatus for making large fiberglass structures. 4,278,411, Cl. 425-100.000.

Andreini, Rockne J.: *See—*
Bury, Roland P.; Mehlman, Stewart K.; and Andreini, Rockne J., 4,278,464, Cl. 75-51.000.

Andrew, Jerry C.; and Tanner, Roberta R., to International Business Machines Corporation. Xerographic charging. 4,278,342, Cl. 355-3.0CH.

Andrews, Daniel M.: *See—*
Ritchie, Ronald J.; and Andrews, Daniel M., 4,278,991, Cl. 357-81.000.

Andronov, Valery A.; Boyarsky, Alexandr I.; Emelyanov, Viktor I.; and Nabutovsky, Iosif B. Method and regulating device for controlling high-voltage direct current transmission system. 4,279,009, Cl. 363-35.000.

Angle, Lonnie L. Energy amplifier apparatus. 4,278,405, Cl. 417-150.000.

Anic S.p.A.: *See—*
Cucinella, Salvatore; and Dozzi, Giovanni, 4,278,611, Cl. 260-448.0AD.
Faggian, Lucio; and Platone, Edoardo, 4,278,602, Cl. 260-345.100.

Anno, Nobuo: *See—*
Inoue, Hidehiko; Nishikawa, Masao; and Anno, Nobuo, 4,278,266, Cl. 280-276.000.

Antonis, Basil, to Thorn Electrical Industries Limited. Heating of dosing capsule. 4,278,908, Cl. 313-177.000.

Antonov, Lyubomir Y., to Edinen Centar Po Physika. Method of and device for synthesis of speech from printed text. 4,278,838, Cl. 179-1.0SM.

Aomi, Hideki: *See—*
Hisamoto, Iwao; Enjo, Naonori; Maeda, Chiaki; Esaka, Takasige; Omure, Yukio; Iida, Toshihiko; and Aomi, Hideki, 4,278,552, Cl. 252-3.000.

Aoyama, Takahiko: *See—*
Watanabe, Junichi; Aoyama, Takahiko; and Gotoh, Norio, 4,278,147, Cl. 181-256.000.

Aoyama, Toshiho, to Chuo Hatsujo Kabushiki Kaisha. Heat resistant cushion. 4,278,717, Cl. 428-36.000.

Apple Computer, Inc.: *See—*
Wozniak, Stephen G., 4,278,972, Cl. 340-703.000.

Applegate, Lynn E.: *See—*
Bettinger, George E.; Pohland, Hermann W.; and Applegate, Lynn E., 4,278,548, Cl. 210-636.000.

Applied Systems Corporation: *See—*
Buchroeder, Richard A., 4,278,330, Cl. 350-411.000.

Arai, Yoshinobu: *See—*
Hayashi, Masaki; Shimoji, Katsuichi; and Arai, Yoshinobu, 4,278,688, Cl. 424-305.000.

Arakawa, Co. Ltd.: *See—*
Arakawa, Hideo, 4,278,224, Cl. 248-246.000.

Arakawa, Hideo, to Arakawa, Co. Ltd. Wedging action fixture. 4,278,224, Cl. 248-246.000.

Archenholtz, Ake, to Asea Aktiebolag. Powder injection apparatus with sieving apparatus. 4,278,240, Cl. 266-216.000.

Archifar Laboratori Chimice Farmacologici S.p.A.: *See—*
Cesti, Pietro; Marsili, Leonardo; and Pasqualucci, Carmine, 4,278,792, Cl. 542-420.000.

Arco Polymers, Inc.: *See—*
DiGiulio, Adolph V.; and Bauer, Jack N., 4,278,767, Cl. 521-88.000.
DiGiulio, Adolph V.; and Bauer, Jack N., 4,278,768, Cl. 521-88.000.
Fava, Ronald A., 4,278,775, Cl. 525-132.000.
Spicuzza, John P., Jr., 4,278,730, Cl. 428-407.000.
Spicuzza, John P., Jr.; and Klepic, John G., III, 4,278,731, Cl. 428-407.000.
Spicuzza, John P., Jr., 4,278,732, Cl. 428-407.000.

Argus Chemical Corporation: *See—*
Halle, Reidar; and Peterson, David, 4,278,612, Cl. 260-453.0RZ.

Arndt, Charles J.: *See—*
Oory, Robert F.; and Arndt, Charles J., 4,278,190, Cl. 222-561.000.

Arnett, Coleman C.; Godfrey, James W.; and Miller, Mark R. Door status detector apparatus. 4,278,968, Cl. 340-545.000.

Arsatiants, Raisa A.: *See—*
Debabov, Vladimir G.; Kozlov, Jury I.; Zhdanova, Nelli I.; Khurges, Evgeny M.; Yankovsky, Nikolai K.; Rozinov, Mikhail N.; Shakulov, Rustem S.; Rebentish, Boris A.; Livshits, Vitaly A.; Gusyatiner, Mikhail M.; Mashko, Sergei V.; Moshentseva, Vera N.; Kozyreva, Ljudmila F.; and Arsatiants, Raisa A., 4,278,765, Cl. 435-172.000.

Arthur D. Little, Inc.: *See—*
Santhanam, Chakra J.; and Nadkarni, Ravindra M., 4,278,539, Cl. 210-724.000.

Arthur Shaw Manufacturing Limited: *See—*
Douglas, Jack E.; and Bigley, Richard J., 4,278,306, Cl. 308-6.00C.

Artweger, Wolfgang; and Burger, Anton, to "Wohn-Art"-Freizeitartikel Gesellschaft m.b.H. Cabin construction. 4,277,919, Cl. 52-2.000.

Asada, Hiroyuki: *See—*
Umemura, Sumio; Ohdan, Kyoji; Matsuzaki, Tokuo; Asada, Hiroyuki; and Tsuruoka, Masao, 4,278,614, Cl. 260-465.300.

Asai, Kozo. Adjustable headrest. 4,278,291, Cl. 297-391.000.

Asea Aktiebolag: *See—*
Archenholtz, Ake, 4,278,240, Cl. 266-216.000.
Sander, Lars, 4,278,349, Cl. 356-44.000.

Ashai Glass Company, Ltd.: *See—*
Matsuhiro, Kenzi; and Masuda, Yasushi, 4,278,329, Cl. 350-357.000.

Ashby, Bruce A.; and Schroeter, Siegfried H., to General Electric Company. Ultraviolet light absorbing agents and compositions and articles containing same. 4,278,804, Cl. 556-436.000.

Asher, Mark S.: *See—*
Horn, Stuart B.; Asher, Mark S.; and Dunmire, Howard L., 4,277,948, Cl. 62-6.000.

Aso, Kazuo; Nishioka, Takesaburo; Yamamoto, Takemi; Miyai, Naomichi; and Matsuno, Jun-ichi, to Kawasaki Steel Corporation. Method of producing hollow steel ingot and apparatus therefor. 4,278,124, Cl. 164-125.000.

Atanasovski, Marin. Method of casting photographs in dome-shaped structures. 4,278,626, Cl. 264-40.100.

Athearn, Lee F., to Duracell International Inc. Expandable casing for electro-chemical cells. 4,278,744, Cl. 429-181.000.

Audeh, Costandi A.: *See—*
Yan, Tsoung Y.; and Audeh, Costandi A., 4,278,469, Cl. 106-278.000.

Aumann, James T.: *See—*
Rowley, David S.; Aumann, James T.; and Waldes, Lothar H., 4,278,138, Cl. 175-320.000.

Automation Systems, Inc.: *See—*
Bartlett, Peter G., 4,278,926, Cl. 318-696.000.

Avanzini, Pier G., to Nira Nucleare Italiana Reattori Avanzati. Autoinductive electromagnetic pump and autoinductive direct converter for conducting fluids, particularly liquid metals. 4,278,404, Cl. 417-50.000.

Avco Corporation: *See—*
Waddington, Clive, 4,277,986, Cl. 74-750.00B.

Avco Everett Research Laboratory, Inc.: *See—*
Stickler, David B.; Von Rosenberg, Charles W., Jr.; and Gannon, Richard E., 4,278,445, Cl. 48-197.00R.
Von Rosenberg, Charles W., Jr.; Stickler, David B.; and Gannon, Richard E., 4,278,446, Cl. 48-197.00R.

Avery International Corporation: *See—*
Miniaci, Salvatore J.; and Christiansen, James O., 4,277,902, Cl. 40-2.00R.

B. F. Goodrich Company, The: *See—*
Miller, James R., 4,278,582, Cl. 260-29.6AN.

Baatz, Heinrich; and Rittscher, Dieter, to Steag Kernergie GmbH. Radicactivity-shielding transport or storage receptacle for radioactive wastes. 4,278,892, Cl. 250-506.000.

Baba, Fumio; Miyasaka, Kiyoshi; Yabu, Takashi; and Mogi, Jun-ichi, to Fujitsu Limited. Semiconductor device having cross wires. 4,278,989, Cl. 357-59.000.

Bacher, Michel, to Societe Anonyme Francaise du Ferodo. Hydraulic braking circuit for an automobile vehicle. 4,278,300, Cl. 303-115.000.

Bachl, Herbert, to Getwent Gesellschaft fur Technische und wissenschaftliche Energieumsatzehtwicklungen m.b.H. Fluid flow machine. 4,278,397, Cl. 415-83.000.

Bachofer, Kenneth W., to Modern Controls, Inc. Display panel driver circuit. 4,278,918, Cl. 315-169.400.

Badger Northland Inc.: *See—*
Rammer, William L.; and Swanson, Paul D., 4,278,408, Cl. 417-551.000.

Bain, Peter H., to Boeing Company, The. Electrically heated window. 4,278,875, Cl. 219-522.000.

Baker, Charles W.; Wilson, Robert J.; and Kempf, Dale F., to Eastman Kodak Company. Camera-processor apparatus. 4,278,338, Cl. 354-83.000.

Baker, Daniel A.: *See—*
Friedman, Ernest H.; Flammer, Charles M.; Baker, Daniel A.; and Vamvakas, Spiro, 4,278,096, Cl. 128-695.000.

Baldwin, Francis P.: *See—*
Ver Strate, Gary; and Baldwin, Francis P., 4,278,822, Cl. 570-257.000.

Ball Corporation: *See—*
Marcantonio, Arnold F.; and Dailey, Rodney E., 4,278,735, Cl. 428-432.000.
Sullivan, Richard W.; and Warwick, Robert N., 4,278,709, Cl. 427-233.000.
Sullivan, Richard W., 4,278,711, Cl. 427-284.000.

Barclay, Donald J.; and Vigar, James M. L., to International Business Machines Corporation. Low concentration trivalent chromium electroplating solution and process. 4,278,512, Cl. 204-41.000.

Bardenhagen, Dietrich; Raschka, Wolfgang; Glosmann, Josef; and Tolasch, Gerhard, to Hauni-Werke Korber & Co. KG. Apparatus for transferring cigarettes or the like from trays into magazines of packing machines or the like. 4,278,385, Cl. 414-419.000.

Barents, Roelof H.; and Rossell, John B., to Lever Brothers Company. Marzipan substitute. 4,278,700, Cl. 426-660.000.

Barnowski, Henry G.: *See—*
Chandalia, Kiran B.; and Barnowski, Henry G., 4,278,770, Cl. 521-99.000.

Baron, George B., to Dresser Industries, Inc. Slack prevention system for a crowd rope of a power shovel. 4,278,393, Cl. 414-690.000.

Barry, Richard L., to TRX, Inc. Method for making discrete electrical components. 4,278,706, Cl. 427-96.000.

Bartko, John; and Schlegel, Earl S., to Westinghouse Electric Corp. Forming of contoured irradiated regions in materials such as semiconductor bodies by nuclear radiation. 4,278,475, Cl. 148-1.500.

Bartko, John; and Schlegel, Earl S., to Westinghouse Electric Corp. Method of making ion implanted reverse-conducting thyristor. 4,278,476, Cl. 148-1.500.

Bartlett, Ian G.: *See—*
McKendrick, George A. R.; Bartlett, Ian G.; and Lymer, Donald A., 4,277,960, Cl. 68-205.00R.

Bartlett, Peter G., to Automation Systems, Inc. Step motor circuit. 4,278,926, Cl. 318-696.000.

Bartosek, Edward: *See—*
Dingethal, Frank H.; and Bartosek, Edward, 4,278,693, Cl. 426-129.000.

BASF Aktiengesellschaft: *See—*
Blum, Adolf; Lukas, Siegmar; Schwab, Hermann; and Strobel, Rolf, 4,278,433, Cl. 8-449.000.
Hiller, Heinrich; Eilingsfeld, Heinz; Reinicke, Helmut; and Traub, Fritz, 4,278,606, Cl. 260-380.000.
Kempe, Uwe; Dockner, Toni; Frank, Anton; and Karn, Helmut, 4,278,801, Cl. 548-342.000.
Merger, Franz; and Towae, Friedrich, 4,278,805, Cl. 560-25.000.
Mross, Wolf D.; Titzenthaler, Eckart; Koopmann, Juergen; Schwarzmann, Matthias; and Vogt, Volker, 4,278,562, Cl. 252-430.000.
Rentzea, Costin; Sauter, Hubert; Ammermann, Eberhard; Heilen, Gerd; and Jung, Johann, 4,278,800, Cl. 548-262.000.
Volkamer, Klaus; Brollos, Klaus; Lindner, Alfred; Wagner, Ulrich; Weitz, Hans-Martin; and Schneider, Klaus-Jurgen, 4,278,504, Cl. 203-53.000.

BASF Wyandotte Corporation: *See—*
Walton, William B., 4,278,129, Cl. 166-263.000.

Bass, Dieter, to Georg Fischer Aktiengesellschaft. Method and apparatus for controlling shot-blasting machines. 4,277,918, Cl. 51-415.000.

Battelle Memorial Institute: *See—*
de Pous, Olivier, 4,278,466, Cl. 75-175.500.

Batutis, Edward F.; Rodriguez, Edward; and Kugler, Walter R., to Bendix Corporation, The. Apparatus for separating solids and liquid components. 4,278,545, Cl. 210-521.000.

Bauer, Heinrich F.; and Feitzelmayer, Ernst, to Motoren-und Turbinen-Union Munich GmbH. Method for manufacturing an encapsulated probe on sheathed thermocouples. 4,277,886, Cl. 29-860.000.

Bauer, Jack N.: *See—*
DiGiulio, Adolph V.; and Bauer, Jack N., 4,278,767, Cl. 521-88.000.
DiGiulio, Adolph V.; and Bauer, Jack N., 4,278,768, Cl. 521-88.000.

Bauer, Siegfried; and Burckhart, Dieter, to Eltro GmbH Gesellschaft Fur Strahlungstechnik. Signal simulator. 4,278,430, Cl. 434-2.000.

Baumann, Hans D. Minute flow regulating valve. 4,278,234, Cl. 251-57.000.

Baxter, Leslie A., to Bell Telephone Laboratories, Incorporated. Digital communication system fault isolation circuit. 4,279,034, Cl. 371-8.000.

Baxter Travenol Laboratories, Inc.: *See—*
Norton, William W.; and Boehmer, Henry, 4,278,198, Cl. 229-55.000.
Pope, J. Lee, Jr., 4,278,084, Cl. 128-214.00R.
Shim, Norm, 4,278,085, Cl. 128-214.00F.

Bayer Aktiengesellschaft: *See—*
Botta, Artur; Rother, Heinz-Joachim; and Teichmann, Gunther, 4,278,791, Cl. 542-412.000.
Ebneth, Harold, 4,278,435, Cl. 8-471.000.
Harnisch, Horst, 4,278,795, Cl. 544-219.000.
Krock, Friedrich W.; Neeff, Rutger; and Kuth, Robert, 4,278,434, Cl. 8-471.000.
Marschner, Werner; and Minwegen, Heinz, 4,278,436, Cl. 8-549.000.
Seidler, Helmut; and Gehrke, Gunter, 4,278,607, Cl. 260-383.000.
Stoltefuss, Jurgen; Muller, Lutz; Puls, Walter; and Sitt, Rudiger, 4,278,683, Cl. 424-267.000.

Baynes, William R.; and Hock, Donal D., to Turco Manufacturing Co. Gymnasium set. 4,278,250, Cl. 272-113.000.

BBC Brown Boveri & Company Limited: *See—*
Jacob, Gernot; and Pelloni, Luciano, 4,278,522, Cl. 204-228.000.

Beatrice Foods Co.: *See—*
Hellwig, Oskar A., 4,277,963, Cl. 70-456.00B.

Bechtel, Jon H.; and Geary, Frederick J., to Robertshaw Controls Company. Primary oil burner safety control and intermittent ignition system. 4,278,419, Cl. 431-24.000.

Beckedorff, David L.; Sporer, Michael; and Watts, Bruce R., to Massachusetts Microcomputers, Inc. Programmable appliance controller. 4,279,012, Cl. 364-104.000.

Beckett, Meryl A. M. Van Eek nee, legal representative: *See—*
Van Eek, Wouter, deceased, 4,278,137, Cl. 175-267.000.

Becton Dickinson & Company: *See—*
Hales, Richard H., 4,278,651, Cl. 424-1.000.

Beecham Group Limited: *See—*
Corbett, David F.; and Eglington, Alfred J., 4,278,686, Cl. 424-274.000.

Begin, David E.: *See—*
Stephenson, George M.; and Begin, David E., 4,278,188, Cl. 222-182.000.

Belke, William H.; and Grim, George B., to Caterpillar Tractor Co. Combination rotating fluidized bed combustor and heat exchanger. 4,277,938, Cl. 60-39.350.

Bell & Howell Company: *See—*
Call, Daniel D.; and La Rue, Mervin W., Jr., 4,278,023, Cl. 101-235.000.

Bell Telephone Laboratories, Incorporated: *See—*
Agraz-Guerena, Jorge; Katz, Lewis E.; and Morris, Bernard L., 4,278,705, Cl. 427-93.000.
Baxter, Leslie A., 4,279,034, Cl. 371-8.000.
Christian, Ronald W.; and Kutzavitch, Walter G., 4,279,020, Cl. 364-900.000.
Henry, James L., 4,278,939, Cl. 324-117.00R.
Jones, David F., 4,278,844, Cl. 179-18.00B.
Mack, Iris M.; Rowe, Harrison E.; and Schmidt, Ronald V., 4,278,321, Cl. 350-96.120.
Morriss, Jeffrey C., 4,278,938, Cl. 324-117.00R.
Netravali, Arun N.; Robbins, John D.; and Stuller, John A., 4,278,996, Cl. 358-136.000.
Nicollian, Edward H.; Seidel, Harold; and Smith, George E., 4,278,947, Cl. 331-1.00R.
O'Connor, Paul B.; and Pearson, Arthur D., 4,278,458, Cl. 65-2.000.
Ostermayer, Frederick W., Jr., 4,278,353, Cl. 356-416.000.
Rizzo, Joseph F.; and Rudisill, John A., Jr., 4,278,848, Cl. 179-170.00D.
Simmons, George H., 4,278,842, Cl. 179-16.0EA.
Smith, Nicholas K., 4,279,032, Cl. 370-15.000.
Sund, Erling T., 4,278,849, Cl. 179-175.20C.
Turner, Dennis R., 4,278,520, Cl. 204-207.000.

Benco Industries, Inc.: *See—*
Leuthesser, Fred W., 4,277,904, Cl. 40-564.000.

Bendix Corporation, The: *See—*
Batutis, Edward F.; Rodriguez, Edward; and Kugler, Walter R., 4,278,545, Cl. 210-521.000.
Blakesley, Roland F., 4,278,313, Cl. 339-49.00R.
Gallusser, David O.; Frear, David L.; and Fischer, Charles P., 4,278,317, Cl. 339-258.00R.
Ruoff, Carl F., Jr., 4,278,920, Cl. 318-2.000.

Benke, Alan H.; Morris, Hue T.; and Nady, Louie A., to Stauffer Chemical Company. Continuous process for the production of dichloroacetamides. 4,278,799, Cl. 548-215.000.

Bennett, Peter S., to Storey Brothers and Company Limited. Preparation of padded articles. 4,278,629, Cl. 264-46.800.

Benz, Harry A., to United States of America, National Aeronautics and Space Administration. Image readout device with electronically variable spatial resolution. 4,279,001, Cl. 358-213.000.

Benzinger, James R., to Spaulding Fibre Company, Inc. Epoxy modified aniline-phenolic laminate. 4,278,733, Cl. 428-413.000.

Berger, Dieter; Braun, Franz; Guthlein, Werner; Kuhr, Manfred; and Werner, Wolfgang, to Boehringer Mannheim GmbH. Diagnostic agents for the detection of proteolytic enzymes. 4,278,763, Cl. 435-23.000.

Bergman, Fred S.; and Radelet, Reginald P., to Lindsey Manufacturing Co. Apparatus and method of threading a closed framed opening by helicopters. 4,278,237, Cl. 254-134.3PA.

Bergwerksverband GmbH: *See—*
Bortz, Karl; Thesing, Heinrich; and Eichbaum, Friedrich, 4,278,296, Cl. 299-87.000.

Bernard, Walter J.: *See—*
Millard, Richard J.; Bernard, Walter J.; and Whitman, Alfred, 4,278,513, Cl. 204-42.000.

Berner, Walter, to Robert Bosch GmbH. RPM Regulator for fuel injection pumps in internal combustion engines. 4,278,058, Cl. 123-387.000.

Berry, James A.: *See—*
Sherman, Morton; and Berry, James A., 4,277,926, Cl. 52-303.000.

Berry, William W.: *See—*
Allen, Hanceford L.; and Berry, William W., 4,278,640, Cl. 423-10.000.

Bertrand, Hans: *See—*
Limque, Ferdinand; and Bertrand, Hans, 4,278,421, Cl. 432-152.000.

Bessouat, Roger; Marjollet, Jacques; and Palacio, Gerard, to Stein Industrie S.A. Apparatus for distribution of a mixture of vapor and liquid in a separator with horizontal axis. 4,278,053, Cl. 122-488.000.

Best, Robert M. Crypto microprocessor for executing enciphered programs. 4,278,837, Cl. 178-22.090.

Bettinger, George E.; Pohland, Hermann W.; and Applegate, Lynn E., to Du Pont de Nemours, E. I., and Company. Control of biological growth in reverse osmosis permeators. 4,278,548, Cl. 210-636.000.

Betton, Rene F.: *See—*
Seguela, Marie-Claude J.; Betton, Rene F.; and Gonzalez, Claude A., 4,278,387, Cl. 414-462.000.

Beulens, Theophiel, to Medical Development S.A. Method for manufacturing multi-layer hemodialyzers and improved multi-layer hemodialyzer obtained thereby. 4,278,542, Cl. 210-321.300.

Beuther, Harold; and Schulz, Johann G., to Gulf Research & Development Company. Energy generating process and novel fuel therefor. 4,278,443, Cl. 44-56.000.

Beyer, Robert E.; and Magoulas, John P., to Mobil Oil Corporation. Liquid hydrocarbons containing a fluorescent compound. 4,278,444, Cl. 44-59.000.

Beyl, Jean J. A., to Look. Combined ski boot and safety binding. 4,278,269, Cl. 280-613.000.

Biggs, Robert W.: *See*—
Frichette, Ross S.; Grambo, Ronald E.; Biggs, Robert W.; and Healy, Thomas A., deceased, 4,278,162, Cl. 192-107.00C.

Bigley, Richard J.: *See*—
Douglas, Jack E.; and Bigley, Richard J., 4,278,306, Cl. 308-6.00C.

Billings, Charles A.; and Hofeldt, Robert H., to W. R. Grace & Co. Sealing compositions for minimizing soluble iron migration. 4,278,718, Cl. 428-64.000.

Billington, William P., to National Research Development Corporation. Dispensing apparatus and method. 4,278,183, Cl. 221-211.000.

Bingham, Loran S. Repair coupling for flexible electrical conduit. 4,278,836, Cl. 174-84.00S.

Binoche, Michel, to S K M, Societe Anonyme. Constant flow rate fluid supply device, particularly for a spray gun. 4,278,205, Cl. 239-75.000.

Biran, Joseph, to Hewlett-Packard Company. Method for coating the edge of a printed circuit board to improve its moisture resistance. 4,278,707, Cl. 427-96.000.

Birch, Peter R.; Ling, Kenneth V.; Power, Claude S.; Robinson, Alan J.; Mahoney, Terrence G.; and Las-Laskowski, Stanislaw F. Air classification apparatus. 4,278,532, Cl. 209-19.000.

Bird-Johnson Company: *See*—
Esthimer, William F.; Morin, Edward H.; and Trudell, Richard E., 4,277,945, Cl. 60-710.000.

Birkenmeyer, Robert D., to Upjohn Company, The. Lincomycin compounds. 4,278,789, Cl. 536-11.000.

Bjellqvist, Bengt; Reitberger, Torbjorn; and Morganstern, Kennard H., to Radiation Dynamics, Inc. Method for reducing the monomer residue content in polymer plastics. 4,278,518, Cl. 204-159.200.

BL Cars Limited: *See*—
Rawle, Michael D.; and Marshall, Peter E. G., 4,278,350, Cl. 356-155.000.

Blachly, Donald L.: *See*—
Mitchell, Richard L.; Brundage, Richard B.; and Blachly, Donald L., 4,278,117, Cl. 144-144.00R.

Black & Decker Inc.: *See*—
Alessio, Lorenzo E., 4,278,243, Cl. 269-16.000.

Blackmer, Richard H. Adjustable nasal cannula. 4,278,082, Cl. 128-207.180.

Blackwell, Roy N. Fishing reel with automatic variable drag. 4,278,217, Cl. 242-217.000.

Blake, John B. Clamping device. 4,278,246, Cl. 269-220.000.

Blakeslee, A. Eugene; and Mitchell, Kim W., to United States of America, Energy. Device for conversion of electromagnetic radiation into electrical current. 4,278,474, Cl. 136-249.000.

Blakesley, Roland F., to Bendix Corporation, The. Electrical contact with locking device. 4,278,313, Cl. 339-49.00R.

Blaupunkt-Werke GmbH: *See*—
Hugo, Rolf; and Schiller, Wilfried, 4,278,919, Cl. 315-393.000.

Blickle, Tibor: *See*—
Timko born Jozsa, Judit; Blickle, Tibor; Borlai, Oszkar; and Ujhidy, Aurel, 4,278,319, Cl. 350-3.780.

Bliss, Floyd R.: *See*—
Leininger, Joel C.; Bliss, Floyd R.; and Fairchild, Peter T., 4,279,016, Cl. 364-200.000.

Blomquist, Robert E.; and Reynolds, Charles R., to White-Sundstrand Machine Tool, Inc. Pallet shuttle system. 4,278,381, Cl. 414-349.000.

Blum, Adolf; Lukas, Siegmar; Schwab, Hermann; and Strobel, Rolf, to BASF Aktiengesellschaft. Resist printing process. 4,278,433, Cl. 8-449.000.

Boehland, Melvin G. Color changeable athletic jersey. 4,277,848, Cl. 2-115.000.

Boehmer, Henry: *See*—
Norton, William W.; and Boehmer, Henry, 4,278,198, Cl. 229-55.000.

Boehringer Mannheim GmbH: *See*—
Berger, Dieter; Braun, Franz; Guthlein, Werner; Kuhr, Manfred; and Werner, Wolfgang, 4,278,763, Cl. 435-23.000.
Hubner, Manfred; Kuhnle, Hans; Witte, Ernst-Christian; Heerdt, Ruth; Weyer, Rudi; and Hitzel, Volker, 4,278,680, Cl. 424-266.000.
Wulff, Karl; Stahler, Fritz; and Michal, Gerhard, 4,278,760, Cl. 435-8.000.

Boeing Company, The: *See*—
Bain, Peter H., 4,278,875, Cl. 219-522.000.
Hamm, Robert A.; and Whitener, Philip C., 4,278,485, Cl. 156-173.000.
Huber, Doyle W.; Smith, Richard H.; and Strong, Robert L., 4,277,868, Cl. 29-33.00Q.
Keller, Bruce E., 4,278,352, Cl. 356-358.000.
Riemer, Dietrich E.; and Corwin, Rudolph E., 4,278,831, Cl. 136-256.000.

Boer, Werner: *See*—
Lachner, Hans; and Boer, Werner, 4,278,005, Cl. 411-337.000.

Boge GmbH: *See*—
Leibeling, Heinz, 4,278,272, Cl. 280-708.000.

Bogusch, Erich: *See*—
Helletsberger, Harald; Aichhorn, Anton; and Bogusch, Erich, 4,278,449, Cl. 51-309.000.

Bohme, Gunther. Piece of furniture for sitting and lying. 4,277,858, Cl. 5-66.000.

Bojkov, Ognyan D.: *See*—
Petrov, Nikolov Y.; Pavlova, Maria M.; and Bojkov, Ognyan D., 4,278,641, Cl. 423-49.000.

Boldt, Rainer: *See*—
Voigt, Gunter; and Boldt, Rainer, 4,278,636, Cl. 422-84.000.

Bolen, Charles E.: *See*—
Marzocchi, Alfred; Roberts, Michael C.; and Bolen, Charles E., 4,278,470, Cl. 106-281.00R.

Bona Fide Factory Products, Inc.: *See*—
Sobel, Marvin, 4,278,033, Cl. 109-59.00R.

Bonci, Darlene K.: *See*—
Harris, S. Richard; and Bonci, Darlene K., 4,278,653, Cl. 424-1.000.

Bonnet, Jean-Loup; and Fierfort, Claude, to Schlumberger Technology Corporation. Seal and pressure balance system for an electrode-type logging sonde. 4,278,942, Cl. 324-347.000.

Bonney, Oren V.: *See*—
Eis, Frederick G.; Bonney, Oren V.; and Sackett, Willard A., 4,278,541, Cl. 210-112.000.

Boomgaard, Dirk J.: *See*—
Wehrli, Henry A., III; Boomgaard, Dirk J.; and Lund, Alvin O., deceased, 4,278,150, Cl. 187-29.00R.

Boone, David E.: *See*—
Caspari, Gunter; and Boone, David E., 4,278,781, Cl. 526-150.000.

Borden, Peter G., to Varian Associates, Inc. Monolithic series-connected solar cell. 4,278,473, Cl. 136-249.000.

Borlai, Oszkar: *See*—
Timko born Jozsa, Judit; Blickle, Tibor; Borlai, Oszkar; and Ujhidy, Aurel, 4,278,319, Cl. 350-3.780.

Bormann, Dieter: *See*—
Durckheimer, Walter; Bormann, Dieter; Ehlers, Eberhard; Schrinner, Elmar; and Heymes, Rene, 4,278,793, Cl. 544-27.000.

Borona, Russell T., to Westinghouse Electric Corp. Circuit breaker structure. 4,278,859, Cl. 200-144.00R.

Boros, Eugene J.; and Peck, David W., to Union Carbide Corporation. Process for production of 1-naphthyl methylcarbamate. 4,278,807, Cl. 560-134.000.

Borsanyi, Alexander S.; Ivanovich, Peter; and Vaughan, Urte, to American Hospital Supply Corporation. Peritoneal catheter. 4,278,092, Cl. 128-348.000.

Borsig GmbH: *See*—
Eiermann, Dankwart, 4,278,409, Cl. 418-61.00A.

Bortz, Karl; Thesing, Heinrich; and Eichbaum, Friedrich, to Bergwerksverband GmbH. Coal mining drum with adjustable linier edge cutters. 4,278,296, Cl. 299-87.000.

Borzone, Rocco R., to Howmedica, Inc. Soft tissue retainer for use with bone implants, especially bone staples. 4,278,091, Cl. 128-334.00C.

Bos, Bernardus W.; and Wijbenga, Harke M., to Staat der Nederlanden (Staatsbedrijf der Posterijen, Telegrafie en Telefonie). Method and device for detecting the presence of one or more pulse code modulated multi-frequency code signals. 4,279,017, Cl. 364-484.000.

Botta, Artur; Rother, Heinz-Joachim; and Teichmann, Gunther, to Bayer Aktiengesellschaft. Benzimidazolyl-2-alkane-phosphonic acids. 4,278,791, Cl. 542-412.000.

Bottum, Edward W. Heat pump. 4,277,946, Cl. 62-235.100.

Bouchard, Andre C.; and Jirmanus, Naila S., to GTE Products Corporation. Photoflash lamp, method of making same, and photoflash circuit. 4,278,420, Cl. 431-362.000.

Bouchard, Andre C.: *See*—
Waymouth, John F.; Bouchard, Andre C.; Fowler, Richard A.; and Hall, Harold H., Jr., 4,278,310, Cl. 316-24.000.

Boughtflower, Charles A.: *See*—
Davis, Kenneth P.; and Boughtflower, Charles A., 4,278,227, Cl. 248-487.000.

Bouldin, Eric W.; and Drexler, Jerome, to Drexler Technology Corporation. Reflective data storage medium made by silver diffusion transfer. 4,278,756, Cl. 430-414.000.

Bouldin, Eric W.: *See*—
Drexler, Jerome; and Bouldin, Eric W., 4,278,758, Cl. 430-616.000.

Boundy, Bruce K., to Westinghouse Electric Corp. Versatile, electrified space dividing wall panel system. 4,278,834, Cl. 174-48.000.

Bowen, John C., to Ametek, Inc. Solar energy collector assembly and sub-assemblies thereof. 4,278,070, Cl. 126-417.000.

Boyarsky, Alexandr I.: *See*—
Andronov, Valery A.; Boyarsky, Alexandr I.; Emelyanov, Viktor I.; and Nabutovsky, Iosif B., 4,279,009, Cl. 363-35.000.

Brabetz, Hartmut; Schafer, Heinz; and Gorzel, Dieter, to Wacker-Chemie GmbH. Alkai-soluble, water-resistant binders for non-woven materials. 4,278,727, Cl. 428-290.000.

Bracco Industria Chimica S.p.A.: *See*—
Felder, Ernst; and Pitre, Davide, 4,278,808, Cl. 560-183.000.

Brandenstein, Manfred: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,278,305, Cl. 308-6.00C.
Olschewski, Armin; Kunkel, Heinrich; Brandenstein, Manfred; and Schurger, Rainer, 4,278,307, Cl. 308-201.000.

Braun Aktiengesellschaft: *See*—
Roth, Johann, 4,278,333, Cl. 352-170.000.

Braun, Franz: *See*—
Berger, Dieter; Braun, Franz; Guthlein, Werner; Kuhr, Manfred; and Werner, Wolfgang, 4,278,763, Cl. 435-23.000.

Braun, Gert. Guide-rail assembly for longwall mining apparatus. 4,278,294, Cl. 299-34.000.

Brax, Harri J.; Porinchak, Joseph F.; and Weinberg, Alan S., to W. R. Grace & Co. Ethylene-vinyl acetate copolymer film laminate. 4,278,738, Cl. 428-515.000.

Breckinridge, James B.; Norton, Robert H.; Schindler, Rudolf A.; and Frosch, Robert A. Interferometer. 4,278,351, Cl. 356-345.000.

Breuer, Miklos M., to Gillette Company, The. Hair setting and bodying composition and method. 4,278,659, Cl. 424-71.000.

Briles, Wallace E.; and Dubin, Robert W. Device for capturing and retaining spilt fluids. 4,278,115, Cl. 141-86.000.

Brill-Edwards, Kenneth O. P., to Crescent Roofing Company Limited. Roofing panels. 4,278,071, Cl. 126-428.000.

Bristol-Myers Company: *See*—
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,278,675, Cl. 424-253.000.
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,278,600, Cl. 260-239.100.

Brixy, Heinz; and Hofer, Helmut, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Noise-temperature thermometer. 4,278,828, Cl. 136-232.000.

Brollos, Klaus: *See*—
Volkamer, Klaus; Brollos, Klaus; Lindner, Alfred; Wagner, Ulrich; Weitz, Hans-Martin; and Schneider, Klaus-Jurgen, 4,278,504, Cl. 203-53.000.

Brown, David R.: *See*—
Keeffe, William M.; and Brown, David R., 4,278,910, Cl. 313-220.000.

Brown, John E., to West & Sons (Engineers) Limited. Seal unit. 4,278,260, Cl. 277-110.000.

Brown, Kenneth A.: *See*—
Brown, Michael D.; and Brown, Kenneth A., 4,277,874, Cl. 29-235.000.

Brown, Michael D.; and Brown, Kenneth A. Air filtration bag replacement device. 4,277,874, Cl. 29-235.000.

Brundage, Richard B.: *See*—
Mitchell, Richard L.; Brundage, Richard B.; and Blachly, Donald L., 4,278,117, Cl. 144-144.00R.

Brunelli, Romeo; and Casamatta, Angelo, to Honeywell Information Systems Italia S.p.A. Bidirectional transmission circuit for interlocked signals. 4,279,033, Cl. 370-29.000.

Bryant, Dannie: *See*—
Wilds, Robert W.; Meyer, Robert E.; Grannen, Walter A., III; and Bryant, Dannie, 4,278,417, Cl. 425-577.000.

BS & B Safety Systems, Inc.: *See*—
Wood, Loren E.; Allen, Jerome D.; Clift, Miner E.; Kays, Jerry W.; and Forsythe, Calvin C., 4,278,181, Cl. 220-89.00A.

Buchele, Wesley F., to Iowa State University Research Foundation, Inc. Rotary tiller slot planter and method for using same. 4,278,036, Cl. 111-52.000.

Buchner, Norbert; and Liede, Dieter, to Robert Bosch Verpackungsmaschinen GmbH. Light weight package container made from multi-layer material. 4,278,716, Cl. 428-35.000.

Buchroeder, Richard A., to Applied Systems Corporation. Catadioptric virtual-zoom optical system. 4,278,330, Cl. 350-411.000.

Bucyrus-Erie Company: *See*—
Gregor, Robert A.; and Morgan, Ned L., 4,278,301, Cl. 305-11.000.

Budd Company, The: *See*—
Eggert, Walter S., Jr., 4,278,029, Cl. 105-224.100.

Buffa, Albert L. Safety plug for arc welder connectors. 4,278,312, Cl. 339-38.000.

Buhler, Rato R., to American Optical Corporation. Lens chucking apparatus. 4,277,916, Cl. 51-217.00L.

Buhrer, Erwin, to Georg Fischer Aktiengesellschaft. System for handling pattern devices in a molding plant for the production of mold halves in mold boxes. 4,278,125, Cl. 164-412.000.

Burba, Christian; Volland, Hans-Guenter; and Esper, Norbert, to Schering Aktiengesellschaft. Polyvinyl chloride plastisols. 4,278,713, Cl. 427-388.200.

Burckhart, Dieter: *See*—
Bauer, Siegfried; and Burckhart, Dieter, 4,278,430, Cl. 434-2.000.

Burdett, Kenneth A., to Dow Chemical Company, The. Process for preparing 2-isocyanatoalkyl esters of organic carboxylic acids. 4,278,809, Cl. 560-222.000.

Burger, Anton: *See*—
Artweger, Wolfgang; and Burger, Anton, 4,277,919, Cl. 52-2.000.

Burgess, Francis P.; Cormier, Raymond G.; Guiguizian, Jacques; and Lutz, Leo O., to Nashua Corporation. Sheet stripping apparatus. 4,278,341, Cl. 355-3.0SH.

Burlett, Frederick E. Full height sewer system manhole invert form assembly with angularly adjustable intersecting flow path. 4,278,229, Cl. 249-11.000.

Buros, Melvin S. Extended clear band carrier-strip. 4,278,880, Cl. 235-493.000.

Burroughs Corporation: *See*—
Clifford, James A.; and Pearson, Daniel E., 4,278,988, Cl. 357-51.000.
Nelson, Edward I.; Mueller, Harry B.; and Lane, John E., 4,278,965, Cl. 340-365.00P.
Ritchie, Ronald J.; and Andrews, Daniel M., 4,278,991, Cl. 357-81.000.

Bury, Roland P.; Mehlman, Stewart K.; and Andreini, Rockne J., to Union Carbide Corporation. Method for preventing slopping during subsurface pneumatic refining of steel. 4,278,464, Cl. 75-51.000.

Bush, Herbert A., Jr.: *See*—
Oxenreider, Terry R.; and Bush, Herbert A., Jr., 4,278,742, Cl. 429-88.000.

Butera, Anthony W. Posi-draft stabilizer. 4,278,068, Cl. 126-307.00A.

Butwell, Kenneth F.: *See*—
Sigmund, Paul W.; and Butwell, Kenneth F., 4,278,621, Cl. 261-114.00R.

Byk-Mallinckrodt CIL B.V.: *See*—
van Rossem, Hendrik, 4,278,167, Cl. 206-45.340.

Byrd, Geoffrey C.; and Stanier, Colin, to Imperial Chemical Industries Limited. Clamping diaphragms or membranes in electrolytic cells. 4,278,523, Cl. 204-252.000.

Cabot Corporation: *See*—
Rappas, Alkis S.; Menashi, Jameel; and Douglas, Donald A., 4,278,644, Cl. 423-58.000.

Cachier, Gerard; and Espaignol, Jacques, to Thomson-CSF. Solid-state millimeter wave source comprising a directive antenna. 4,278,951, Cl. 331-96.000.

Caggiula, Christopher A.: *See*—
Davis, Austin E.; Cormier, Raymond G.; and Caggiula, Christopher A., 4,278,345, Cl. 355-15.000.

Cailliot, Serge. Continuous centrifugal separator. 4,278,201, Cl. 233-27.000.

Calcote, Hartwell F.; and Olson, Douglas B., to Aerochem Research Laboratories, Inc. Flame sampling apparatus and method. 4,278,441, Cl. 23-232.00E.

Caldwell, Benton B. Portable electric wire reel. 4,278,214, Cl. 242-106.000.

California Institute of Technology: *See*—
Heyser, Richard C., 4,279,019, Cl. 364-569.000.

Call, Daniel D.; and La Rue, Mervin W., Jr., to Bell & Howell Company. Drive system for endorser. 4,278,023, Cl. 101-235.000.

Callahan, Thomas: *See*—
Donarumma, Angelo; and Callahan, Thomas, 4,278,691, Cl. 426-80.000.

Cameron, Larry E.; Cook, Kenneth J.; Neff, Vance E.; and Rowland, Keith L., to Valeron Corporation, The. Machine process controller. 4,279,013, Cl. 364-105.000.

Campbell, Barry, to R. A. Pearson Company. Case packing machine. 4,277,932, Cl. 53-497.000.

Campbell, Roy E.; and Wilkinson, John D., to Ortloff Corporation. Hydrocarbon gas processing. 4,278,457, Cl. 62-24.000.

Campen, Kenneth W., to Tecumseh Products Company. Ignition timing. 4,278,054, Cl. 123-146.50A.

Canon Kabushiki Kaisha: *See*—
Fukuda, Tadaji; and Sugiura, Susumu, 4,279,000, Cl. 358-213.000.
Ito, Fumio; Harigaya, Isao; Taguchi, Tetsuya; Tamura, Shuichi; Hirohata, Michio; and Matsuda, Mutsuhide, 4,278,336, Cl. 354-51.000.
Kato, Yuzo; Ogino, Yasuo; Hiraga, Ryozo; Yoshinari, Hideki; Tozuka, Masao; Kano, Ichiro; and Suzuki, Akiyoshi, 4,278,893, Cl. 250-548.000.
Mashimo, Yukio, 4,278,337, Cl. 354-60.00R.
Tanaka, Kazuo, 4,278,331, Cl. 350-411.000.
Toyama, Masamichi; Hirata, Noritsugu; Iwama, Hideto; Okajima, Hidekazu; and Nishimura, Akimasa, 4,278,340, Cl. 354-195.000.

Canzano, Fred D.: *See*—
Canzano, Pasquale S.; and Canzano, Fred D., 4,278,073, Cl. 126-437.000.

Canzano, Pasquale S.; and Canzano, Fred D. System, method and apparatus for storing and converting solar energy into heat and/or shaft work. 4,278,073, Cl. 126-437.000.

Cardini, Giuliano: *See*—
Rottigni, Claudio; and Cardini, Giuliano, 4,278,764, Cl. 435-144.000.

Caris, Richard F., to Interface, Inc. Weighing apparatus with overload protection for off-center loading. 4,278,139, Cl. 177-154.000.

Carl Hurth Maschinen- und Zahnradfabrik: *See*—
Eichinger, Hans; and Huebl, Julius, 4,278,028, Cl. 105-136.000.
Eichinger, Johann; and Huebl, Julius, 4,278,027, Cl. 105-131.000.

Carleton, John S.; and Senghaas, Karl A. Dental mirror warmer. 4,278,870, Cl. 219-219.000.

Carleton, William A.: *See*—
Mower, Michael L.; and Carleton, William A., 4,278,161, Cl. 192-84.00C.

Carondelet Foundry Company: *See*—
Culling, John H., 4,278,465, Cl. 75-122.000.

Carpenter, Dale, to Hillyard Enterprises, Inc. Coating composition for synthetic plastic substrates and methods for preparing and using same. 4,278,578, Cl. 260-27.00R.

Carreira, Emmanuel M., Sr., to Dobbins, Thomas A. Binocular stand for astronomical observations. 4,278,320, Cl. 350-26.000.

Carrier Drysys Limited: *See*—
Clarke, Ronald M.; and Johnston, Edward, 4,278,046, Cl. 118-695.000.

Carson, Lansing M.: *See*—
United States of America, National Aeronautics and Space Administration; and Carson, Lansing M., 4,279,018, Cl. 364-514.000.

Carter, Charles E. Pivotable dolly for holding transporting and hanging a door. 4,278,244, Cl. 269-17.000.

Casacci, Severin, to Neyrpic. Control mechanism for two cut-off devices mounted in series. 4,278,108, Cl. 137-613.000.

Casamatta, Angelo: *See*—
Brunelli, Romeo; and Casamatta, Angelo, 4,279,033, Cl. 370-29.000.

Casella, Anthony J.: *See*—
Jenq, Cheng-Yih, 4,278,702, Cl. 427-45.100.

Casio Computer Co., Ltd.: *See*—
Matsuzaki, Akio, 4,278,861, Cl. 200-340.000.

Caspari, Gunter; and Boone, David E., to Standard Oil Company (Indiana). Catalyst and process for the polymerization of ethylene and terminal olefins. 4,278,781, Cl. 526-150.000.

Cassanelli, Robert R.; Wauters, Ronald P.; Cole, Richard A.; Evans, David N.; and Herbst, Darrel E., to General Foods Corporation. Method for increasing preparation tolerance of a dry mix having a gum to form an oil-aqueous emulsion. 4,278,692, Cl. 426-96.000.

Cassonnet, Jean-Claude M.; Hiot, Guy; and Cohen, Violette, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Arrangement for converting virtual addresses into physical addresses in a data processing system. 4,279,014, Cl. 364-200.000.

Castle, Ross M. Curtain rod for sliding glass door. 4,277,913, Cl. 49-70.000.

Caterpillar Tractor Co.: *See*—
Belke, William H.; and Grim, George B., 4,277,938, Cl. 60-39.350.
Cobb, Delwin E., 4,278,295, Cl. 299-69.000.
Crabb, Elmer R.; and Parr, Alta M., 4,277,964, Cl. 70-484.000.
Golan, Kenneth F.; and Winzeler, James E., 4,278,155, Cl. 192-4.00R.
Kessinger, Orville E., Jr., 4,278,151, Cl. 188-71.300.
Livesay, Richard E., 4,277,876, Cl. 29-402.010.
Livesay, Richard E., 4,278,303, Cl. 305-57.000.
Livesay, Richard E., 4,278,368, Cl. 404-117.000.
Meisel, Thomas C., Jr., 4,278,392, Cl. 414-569.000.

Celotex Corporation, The: *See*—
Sherman, Morton; and Berry, James A., 4,277,926, Cl. 52-303.000.

Cesti, Pietro; Marsili, Leonardo; and Pasqualucci, Carmine, to Archifar Laboratori Chimice Farmacologici S.p.A. Method of producing derivatives of 6-β-amidinopenicillanic acid. 4,278,792, Cl. 542-420.000.

Chalmers, Gerald W.: *See*—
Hibbs, Joseph E.; Chalmers, Gerald W.; Durrell, Robert L.; and Smith, Walter C., 4,278,026, Cl. 102-254.000.

Chambless, Joe G.; and McGlasson, Paul E., to W-K-M Wellhead Systems, Inc. Means for tensioning tubing in a wellhead assembly. 4,278,278, Cl. 285-143.000.

Champlin, John H., Jr.: *See*—
Starai, Terrence M.; Champlin, John H., Jr.; and Johnson, Randall J., 4,278,957, Cl. 333-202.000.

Chandalia, Kiran B.; and Barnowski, Henry G., to Olin Corporation. Stabilization of high resilience polyurethane foam by including in the reaction mixture a polyol containing an effectively dispersed finely divided solid particulate material. 4,278,770, Cl. 521-99.000.

Chari, Madabushi V. K.; Jones, Donald W.; and Laskaris, Evangelos T., to Electric Power Research Institute. Apparatus for supporting a stator winding in a superconductive generator. 4,278,905, Cl. 310-52.000.

Chemed Corporation: *See*—
Kerst, Herman, 4,278,635, Cl. 422-14.000.

Chemie Linz Aktiengesellschaft: *See*—
Wegleitner, Karlheinz; Krulla, Wilfried; and Willim, Richard, 4,278,794, Cl. 544-192.000.

Chen, Chung Y., to Eastman Kodak Company. Novel electron donor precursors and photographic elements containing them. 4,278,750, Cl. 430-218.000.

Chen, Nai Y.; and Reagan, William J., to Mobil Oil Corporation. Hydrocarbon manufacture from alcohols. 4,278,565, Cl. 252-455.00Z.

Chiao, Raymond Y.; Fetterman, Harold R.; and Schlossberg, Howard R., to United States of America, Air Force. Near millimeter wavelength modulator and tunable oscillator. 4,278,953, Cl. 332-7.510.

Chicago Bridge & Iron Company: *See*—
Shadid, Fahim E., 4,278,241, Cl. 266-241.000.

Chicago Pneumatic Tool Company: *See*—
Giardino, David A., 4,278,103, Cl. 137-50.000.

Chidester, James R.: *See*—
Young, James E.; Walker, Ralph S.; and Chidester, James R., 4,278,083, Cl. 128-214.00R.

Chien, James C. W.; Evnochides, Steven K.; and Howlett, Joseph A., to Gulf Oil Corporation. Platable propylene polymer compositions. 4,278,510, Cl. 204-14.00R.

Chimentin, Ermenegildo. Prefabricated burial chamber. 4,277,924, Cl. 52-136.000.

Chiou, Suchi. Telephone index for automatic dialing. 4,278,845, Cl. 179-90.00B.

Chiu, Herman S., to Union Carbide Corporation. Modified liquid smoke compositions and food casings prepared therefrom. 4,278,694, Cl. 426-135.000.

Chmela, Franz: *See*—
Urlaub, Alfred; and Chmela, Franz, 4,278,057, Cl. 123-276.000.

Cho, Iue C.; Frederiksen, Christopher W.; and Hoer, Ralph A., to Ralston Purina Company. Protein isolate having low solubility characteristics and process for producing same. 4,278,597, Cl. 260-123.500.

Choi, Dai S., to Conoco, Inc. Rock bolt and installation system. 4,278,363, Cl. 405-260.000.

Choi, Ye-Chin: *See*—
Srinivasan, Vadake R.; and Choi, Ye-Chin, 4,278,766, Cl. 435-253.000.

Cholet, Jacques; Damotte, Bernard; and Laurent, Jean, to Institut Francais du Petrole. Optical recording device. 4,278,982, Cl. 346-108.000.

Choy, Clement K., to Procter & Gamble Company, The. Surfactant cake compositions. 4,278,571, Cl. 252-558.000.

Choyce, David P. Intraocular anterior chamber implants. 4,277,851, Cl. 3-13.000.

Chrisman, Max G.; Ganzala, Gary W.; and Tiede, Ralph L., to Owens-Corning Fiberglas Corporation. Method and apparatus for mixing and homogenizing molten glass. 4,278,460, Cl. 65-134.000.

Christensen, Inc.: *See*—
Rowley, David S.; Aumann, James T.; and Waldes, Lothar H., 4,278,138, Cl. 175-320.000.

Christian, Ronald W.; and Kutzavitch, Walter G., to Bell Telephone Laboratories, Incorporated. Power supply circuit for a data processor. 4,279,020, Cl. 364-900.000.

Christiansen, James O.: *See*—
Miniaci, Salvatore J.; and Christiansen, James O., 4,277,902, Cl. 40-2.00R.

Christopher, Todd J., to RCA Corporation. PCM Detector for video reproducer apparatus. 4,278,992, Cl. 358-13.000.

Christophliemk, Peter; and Wust, Willi, to Henkel Kommanditgesellschaft auf Aktien; and Deutsche Gold- und Silber-Scheideanstalt Vonmals Roessler. Continuous process for the production of amorphous sodium aluminosilicate in an elongated reaction zone. 4,278,649, Cl. 423-329.000.

Chromalloy American Corporation: *See*—
Madison, James B.; and Hiland, Larry K., 4,278,667, Cl. 424-232.000.
Madison, James B.; and Hiland, Larry K., 4,278,679, Cl. 424-263.000.

Chrysler Corporation: *See*—
Roth, Helmut; and Farrell, Terry J., 4,278,159, Cl. 192-58.00B.

Chu, Chin-Chiun; and Kaeding, Warren W., to Mobil Oil Corporation. Shape selective reactions with zeolite catalyst modified with group IVB metal. 4,278,827, Cl. 585-467.000.

Chuo Hatsujo Kabushiki Kaisha: *See*—
Aoyama, Toshiho, 4,278,717, Cl. 428-36.000.

Ciba-Geigy AG: *See*—
Wright, Peter J., 4,278,749, Cl. 430-213.000.

Ciba-Geigy Corporation: *See*—
Dexter, Martin; and Winter, Roland A. E., 4,278,589, Cl. 260-45.8NT.
Dexter, Martin; and Winter, Roland A. E., 4,278,590, Cl. 260-45.8NT.
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,278,613, Cl. 260-465.00D.
Traxler, Peter; Gruner, Johannes; and Nuesch, Jakob, 4,278,665, Cl. 424-181.000.
Wheeler, Ian R.; Robertson, George H.; and McGregor, David, 4,278,601, Cl. 260-314.500.

Ciman, Gelindo. Wind-driven power generator. 4,278,894, Cl. 290-44.000.

Cities Service Company: *See*—
Lambright, Orbie N.; and Thapar, Mangat R., 4,279,026, Cl. 367-70.000.

Clark, Gary T., to Eastman Kodak Company. Mono azo dyes from (2-alkoxy-5-alkanoylaminoanilino)alkoxy or aryloxy alkanes. 4,278,599, Cl. 260-207.000.

Clark, John A., Jr., to Harsco Corporation. Water heater. 4,278,069, Cl. 126-366.000.

Clarke, Ronald M.; and Johnston, Edward, to Carrier Drysys Limited. Paint spraying apparatus. 4,278,046, Cl. 118-695.000.

Clayton, Colin G.; and Wormald, Malcolm R., to United Kingdom Atomic Energy Authority. Coal ash monitors. 4,278,882, Cl. 250-255.000.

Clifford, James A.; and Pearson, Daniel E., to Burroughs Corporation. Semiconductor device for providing a selectable reference voltage. 4,278,988, Cl. 357-51.000.

Clift, Miner E.: *See*—
Wood, Loren E.; Allen, Jerome D.; Clift, Miner E.; Kays, Jerry W.; and Forsythe, Calvin C., 4,278,181, Cl. 220-89.00A.

Coats, Montgomery R.; Pendleton, Turner C., deceased; and Pendleton, Reine H., to Pendleton, Reine H.; Pendleton, Claude A.; and Coats, Sue Pendleton, a part interest. Apparatus and method for indicating sound levels. 4,277,980, Cl. 73-646.000.

Coats, Sue Pendleton: *See*—
Coats, Montgomery R.; Pendleton, Turner C., deceased; and Pendleton, Reine H., 4,277,980, Cl. 73-646.000.

Cobb, Delwin E., to Caterpillar Tractor Co. Impacting rock breaker. 4,278,295, Cl. 299-69.000.

Cockerill: *See*—
Rutten, Leon, 4,277,965, Cl. 72-53.000.

Cockerill, Peter E.: *See*—
Wheldon, Alfred G.; and Cockerill, Peter E., 4,278,012, Cl. 99-278.000.

Cohen, Violette: *See*—
Cassonnet, Jean-Claude M.; Hiot, Guy; and Cohen, Violette, 4,279,014, Cl. 364-200.000.

Cole, Graham M., to Dreamland Electrical Appliances Limited. Heating circuits. 4,278,874, Cl. 219-505.000.

Cole, Richard A.: *See*—
Cassanelli, Robert R.; Wauters, Ronald P.; Cole, Richard A.; Evans, David N.; and Herbst, Darrel E., 4,278,692, Cl. 426-96.000.

Coll-Palagos, Miguel, to Stauffer Chemical Company. Electroless metal plated laminates. 4,278,739, Cl. 428-623.000.

Collonia, Harald, to VDO Adolf Schindling AG. Device for the control of the traveling speed of a motor vehicle. 4,278,059, Cl. 123-399.000.

Comizzoli, Robert B.: *See—*
White, Lawrence K.; Comizzoli, Robert B.; and Schnable, George L., 4,278,508, Cl. 204-1.00T.
Commissariat a l'Energie Atomique: *See—*
Abramson, Roger; Delisle, Jean-Paul; Elie, Xavier; Salon, Guy; and Peyrelongue, Jean-Pierre, 4,278,499, Cl. 176-37.000.
Ailloud, Jean; and Monteil, Marcel, 4,278,500, Cl. 176-37.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Cassonnet, Jean-Claude M.; Hiot, Guy; and Cohen, Violette, 4,279,014, Cl. 364-200.000.
Composants Industrialises du Batiment, par abreviation C.I.B.: *See—*
Desgouilles, Henri F. M., 4,278,724, Cl. 428-193.000.
Condit, Paul B.: *See—*
Hinshaw, Gerald C.; and Condit, Paul B., 4,278,598, Cl. 260-157.000.
Congoleum Corporation: *See—*
Mansolillo, Robert D., 4,278,483, Cl. 156-79.000.
Conjura, Walter E., to Cosco Industries, Inc. Convertible seal press. 4,278,017, Cl. 101-3.0SP.
Conner, E. C.: *See—*
Conner, Eldon C.; and Conner, E. C., 4,277,999, Cl. 83-425.300.
Conner, Eldon C.; and Conner, E. C. Firewood sawmill. 4,277,999, Cl. 83-425.300.
Conoco, Inc.: *See—*
Choi, Dai S., 4,278,363, Cl. 405-260.000.
Dudt, Philip J., 4,278,447, Cl. 48-210.000.
Consolidated Electronic Industries Proprietary Limited: *See—*
Medding, Reuben; and Kay, Peter D., 4,278,921, Cl. 318-254.000.
Container Corporation of America: *See—*
Nauheimer, James F., 4,278,170, Cl. 206-422.000.
Scheinbaum, Marc C.; and Winburn, Anne L., 4,278,197, Cl. 229-30.000.
Skaggs, Boyd T., 4,278,169, Cl. 206-303.000.
Control Technology, Inc.: *See—*
Hemsher, Frank J., 4,278,966, Cl. 340-366.00R.
Cook, Kenneth J.: *See—*
Cameron, Larry E.; Cook, Kenneth J.; Neff, Vance E.; and Rowland, Keith L., 4,279,013, Cl. 364-105.000.
Cooperrider, Myron T., to R. W. Beckett Corporation. Electromagnetic pump. 4,278,406, Cl. 417-199.00A.
Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Phenolic modified olefin polymers. 4,278,572, Cl. 260-3.000.
Corbett, David F.; and Eglington, Alfred J., to Beecham Group Limited. Carbapenum derivatives, a process for their preparation and their use in pharmaceutical compositions and intermediates. 4,278,686, Cl. 424-274.000.
Cormier, Raymond G.: *See—*
Burgess, Francis P.; Cormier, Raymond G.; Guiguizian, Jacques; and Lutz, Leo O., 4,278,341, Cl. 355-3.0SH.
Davis, Austin E.; Cormier, Raymond G.; and Caggiula, Christopher A., 4,278,345, Cl. 355-15.000.
Cort, Joseph H., to Vega Laboratories, Inc. Orally active MIF analogs with an effect on the central nervous system. 4,278,595, Cl. 260-112.50R.
Corvi-Mora, Camillo. Piperazines. 4,278,796, Cl. 544-400.000.
Corwin, Rudolph E.: *See—*
Riemer, Dietrich E.; and Corwin, Rudolph E., 4,278,831, Cl. 136-256.000.
Cosco Industries, Inc.: *See—*
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Cotton Machinery Company, Inc.: *See—*
Haney, Donald J.; and Gaudette, Andrew J., 4,278,016, Cl. 100-224.000.
Coulter Electronics, Inc.: *See—*
Hodgins, Bruce J.; Saltz, Ivan K.; and Ginsberg, Guenter, 4,278,086, Cl. 128-224.000.
Shine, Ian B., 4,278,936, Cl. 324-71.0CP.
Coulter Systems Corporation: *See—*
Kuehnle, Manfred R.; Hagenlocher, Arno K.; and Giardino, Nicholas A., 4,278,528, Cl. 204-298.000.
Coury, Arthur J.: *See—*
Skarstad, Paul M.; Untereker, Darrel F.; and Coury, Arthur J., 4,278,745, Cl. 429-213.000.
Cowan, Stuart I.: *See—*
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CPC International Inc.: *See—*
Velasco, Violeta S., 4,278,695, Cl. 426-289.000.
Crabb, Elmer R.; and Parr, Alta M., to Caterpillar Tractor Co. Door lock. 4,277,964, Cl. 70-484.000.
Crane, Jimmie W.: *See—*
Kelley, Charles H.; Crane, Jimmie W.; and Ray, Albert D., 4,278,102, Cl. 137-39.000.
Creed, Gerald J.; Dudis, Frank; Edwards, William J.; and Hurler, Herbert T., to Singer Company, The. Chain stitch conversion for lock stitch sewing machine. 4,278,037, Cl. 112-168.000.
Creffield, Geoffrey K.; Wickens, Anthony J.; Dowd, Anthony C. H.; and Henley, Vernon F. F., to United States Borax & Chemical Corporation. Anodizing aluminum. 4,278,737, Cl. 428-469.000.
Crescent Roofing Company Limited: *See—*
Brill-Edwards, Kenneth O. P., 4,278,071, Cl. 126-428.000.
Crocker, Zenas; and Jonah, Wilford B., to Synergistics Chemicals Limited. Process for separating bitumen from a bitumen sand deposit. 4,278,530, Cl. 209-3.000.
Crompton & Knowles Corp.: *See—*
Wineholt, Robert L.; and Feeman, James F., 4,278,616, Cl. 260-512.00C.
Cros, Pierre, to Spie-Batignolles. Hydroelectric power station. 4,278,895, Cl. 290-52.000.
Croscill Curtain Co. Inc.: *See—*
Schwartz, Herbert S., 4,278,714, Cl. 428-4.000.
Cross, Peter S.; and Shreve, William R., to Hewlett-Packard Company. Frequency trimming of surface acoustic wave devices. 4,278,492, Cl. 156-627.000.
Crossley, Peter A., to Fairchild Camera and Instrument Corporation. Method of producing a metal-semiconductor field-effect transistor. 4,277,882, Cl. 29-571.000.
Crossot, Eugene A. Framing and hanging assembly for a sheet material object. 4,277,903, Cl. 40-152.100.
Crowe, John J., to Union Carbide Corporation. Method of manufacturing a contoured stamping die. 4,277,988, Cl. 76-107.00R.
Cucinella, Salvatore; and Dozzi, Giovanni, to Anic S.p.A. Process for synthesizing alkoxyalanates of alkaline earth metals. 4,278,611, Cl. 260-448.0AD.
Culling, John H., to Carondelet Foundry Company. Corrosion-resistant alloys. 4,278,465, Cl. 75-122.000.
Cummings, Kenneth W.; and Perethian, Charles M., to First Champaign Corporation. Pockets for a fairing structure. 4,278,285, Cl. 296-78.100.
Cunningham, William W. Plate check valve. 4,278,106, Cl. 137-512.100.
Curington, Alfred R., to Reedrill, Inc. Variable volume pneumatic drill. 4,278,135, Cl. 173-29.000.
Custom Coating, Inc.: *See—*
Poteet, William C.; Terry, Claude E.; Hamrick, Glen F.; and Walls, Francis G., 4,278,482, Cl. 156-78.000.
Cyclonaire Corporation: *See—*
Jacobson, Wayne M., 4,278,367, Cl. 406-109.000.
Cymbal, William D.; and Kimberlin, Dan R., to General Motors Corporation. Vehicle floor mounted transmission shift lever with steering column backdrive linkage. 4,278,154, Cl. 192-4.00A.
Czech, Joachim: *See—*
Lorscheid, Willy; and Wingen, Ludwig, 4,278,360, Cl. 401-151.000.
Dagenais, Joseph E. Protection means for tracks in a track-laying vehicle. 4,278,391, Cl. 414-559.000.
Daigle, Donald J.: *See—*
Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., 4,278,811, Cl. 564-15.000.
Daikin Kogyo Co., Ltd.: *See—*
Hisamoto, Iwao; Enjo, Naonori; Maeda, Chiaki; Esaka, Takasige; Omure, Yukio; Iida, Toshihiko; and Aomi, Hideki, 4,278,552, Cl. 252-3.000.
Dailey, Rodney E.: *See—*
Marcantonio, Arnold F.; and Dailey, Rodney E., 4,278,735, Cl. 428-432.000.
Daimer, Wolfgang: *See—*
Schmolzer, Gerhard; Daimer, Wolfgang; and Verdino, Heiner, 4,278,580, Cl. 260-29.2EP.
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Honda, Kiyoshi; Kuriyama, Kazuya; Murakami, Shigeru; Sugawara, Ryozo; and Nakamura, Chiaki, 4,278,728, Cl. 428-313.000.
Nakamura, Hidehisa; Hori, Rycichi; Isomoto, Emiko; and Murakami, Yoichi, 4,278,575, Cl. 260-22.0CB.
Daley, Philip A.; Mouhot, Allan R.; and Felice, Dan C. Sawhorse. 4,278,148, Cl. 182-181.000.
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Dangschat, Holmer, to Dr. Johannes Heidenhain GmbH. Precision adjustable table. 4,278,031, Cl. 108-4.000.
Danin, Colin. Article of furniture. 4,277,856, Cl. 5-3.000.
Danulat, Hans F.; John, Kamar P.; Klein, Helmut; and Lukatsch, Stephen, to Metallgesellschaft Aktiengesellschaft. Process of recovering an n-hexane product which is free from aromatic compounds. 4,278,505, Cl. 203-59.000.
Datotek, Inc.: *See—*
Morgan, Barrie O.; and Wilkinson, Mitchell M., 4,278,840, Cl. 179-1.50S.
Daugherty, Jack D.: *See—*
Ahouse, David R.; Daugherty, Jack D.; Glickler, Sheldon L.; Kellen, Paul F.; Sutton, George W.; Korff, David; and Yoder, Marvel J., 4,278,950, Cl. 331-94.50G.
Davis, Austin E.; Cormier, Raymond G.; and Caggiula, Christopher A., to Nashua Corporation. Drum cleaning apparatus. 4,278,345, Cl. 355-15.000.
Davis, Bill G. Temperature sensor valve. 4,278,056, Cl. 123-198.00D.
Davis, French and Associates, Inc.: *See—*
French, Larry A., 4,278,044, Cl. 118-256.000.
Davis, Kenneth P.; and Boughtflower, Charles A., to Magnatex Limited. Vehicle rear-view mirrors. 4,278,227, Cl. 248-487.000.
Dawson, Gregg W.: *See—*
Dawson, Paul R.; and Dawson, Gregg W., 4,277,970, Cl. 73-32.00R.
Dawson, Paul R.; and Dawson, Gregg W. Apparatus and method for specific gr.vity measurement. 4,277,970, Cl. 73-32.00R.
Debabov, Vladimir G.; Kozlov, Jury I.; Zhdanova, Nelli I.; Khurges, Evgeny M.; Yankovsky, Nikolai K.; Rozinov, Mikhail N.; Shakulov, Rustem S.; Rebentish, Boris A.; Livshits, Vitaly A.; Gusyatiner, Mikhail M.; Mashko, Sergei V.; Moshentseva, Vera N.; Kozyreva,

Ljudmila F.; and Arsatiants, Raisa A. Method for preparing strains which produce aminoacids. 4,278,765, Cl. 435-172.000.
DECHEMA: *See—*
Kreysa, Gerhard, 4,278,521, Cl. 204-222.000.
Dedlow, Carl Eugene: *See—*
Whittingham, Barron S., 4,278,471, Cl. 127-37.000.
Dedolph, Richard R., to Gravi-Mechanics Co. Field transplant systems and methods and components thereof. 4,278,625, Cl. 264-39.000.
Deere & Company: *See—*
Regueiro, Jose F., 4,278,064, Cl. 123-577.000.
Westimayer, David A.; and Scholten, Stephen C., 4,278,302, Cl. 305-35.0EB.
De Facci, Claude; and Duerr, Peter C. Welding gas shield control. 4,278,864, Cl. 219-75.000.
de Gaillard, Alain, to Umicum S.A. Rotatable pneumatic gear motor having a deformable adjustable sealed chamber. 4,278,410, Cl. 418-108.000.
Degen, John K., to Degen, June Shirley. Power take-off device for rotary lawnmower. 4,277,935, Cl. 56-2.000.
Degen, June Shirley: *See—*
Degen, John K., 4,277,935, Cl. 56-2.000.
Degussa Aktiengesellschaft: *See—*
Wolff, Siegfried; and Tan, Ewe-Hong, 4,278,587, Cl. 260-42.370.
Degussa Aktiengesellschaft: *See—*
Stober, Reinhard; and Wirthwein, Rolf, 4,278,615, Cl. 260-502.00R.
de Koning, Martinus, to ITT Industries, Inc. Method for mounting a replacement shock absorber. 4,277,877, Cl. 29-402.080.
del Picchia Sergio: *See—*
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Delisle, Jean-Paul: *See—*
Abramson, Roger; Delisle, Jean-Paul; Elie, Xavier; Salon, Guy; and Peyrelongue, Jean-Pierre, 4,278,499, Cl. 176-37.000.
del Picchia, Walter; Martins, Wagner W.; Silveira, Decio G.; and del Picchia Sergio. Relay. 4,279,008, Cl. 361-194.000.
de Marcellus, Roland. Attachments for lawn edgers. 4,278,133, Cl. 172-14.000.
Demido, Michael, to General Motors Corporation. Hydraulic brake booster. 4,278,009, Cl. 91-47.000.
Denise, Pierre. Mechanism for controlling the displacement of a straight edge on a drawing board. 4,277,896, Cl. 33-443.000.
de Pous, Olivier, to Battelle Memorial Institute. Titanium alloy composition and method for the storage of hydrogen. 4,278,466, Cl. 75-175.500.
Derreumaux, Antoine; and Saunier, Bernard. Method for amperometric measurement of the free-chlorine content in a solution. 4,278,507, Cl. 204-1.00T.
Desgouilles, Henri F. M., to Composants Industrialises du Batiment, par abreviation C.I.B. Composite bituminous sheet, particularly for sealing members. 4,278,724, Cl. 428-193.000.
DeSilva, Manuel V. Fuel heating device. 4,278,062, Cl. 123-552.000.
DeSoto, Inc.: *See—*
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Deutsche Gold- und Silber-Scheideanstalt Vonmals Roessler: *See—*
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Dexter, Martin; and Winter, Roland A. E., to Ciba-Geigy Corporation. 2-[2-Hydroxy-3,5-di-(α,α-dimethylbenzyl)phenyl]-2H-benzotriazole and stabilized compositions. 4,278,589, Cl. 260-45.8NT.
Dexter, Martin; and Winter, Roland A. E., to Ciba-Geigy Corporation. 2-[2-Hydroxy-3,5-di-tert-octylphenyl]-2H-Benzotriazole and stabilized compositions. 4,278,590, Cl. 260-45.8NT.
Diamond Shamrock Corporation: *See—*
Gestaut, Lawrence J., 4,278,525, Cl. 204-265.000.
DiBattista, Dante P.; and Kuhn, Robert H., to General Electric Company. Apparatus for clamping a plurality of elements. 4,278,245, Cl. 269-22.000.
Dick, Harold R., to American Optical Corporation. Lens tape cutter. 4,277,891, Cl. 30-316.000.
Diederich, Paul W., Jr. Universal coupling adapter for remote fluid cooling or filtering. 4,278,275, Cl. 285-12.000.
Dielectrics Corporation: *See—*
Orson, Theodore, Sr., 4,277,864, Cl. 24-327.000.
DiGiulio, Adolph V.; and Bauer, Jack N., to Arco Polymers, Inc. Fire-retardant monocarboxylic acid copolymers. 4,278,767, Cl. 521-88.000.
DiGiulio, Adolph V.; and Bauer, Jack N., to Arco Polymers, Inc. Rubber-modified fire-retardant anhydride copolymers. 4,278,768, Cl. 521-88.000.
Dingethal, Frank H.; and Bartosek, Edward, to J. M. Schneider Inc. Shipper package. 4,278,693, Cl. 426-129.000.
Distillers Company (Carbon Dioxide) Limited, The: *See—*
Wheldon, Alfred G.; and Cockerill, Peter E., 4,278,012, Cl. 99-278.000.
Dixon, Guy E., to Panelfold Doors, Inc. Portable and operable wall systems. 4,277,920, Cl. 52-64.000.
Dobbins, Thomas A.: *See—*
Carreira, Emmanuel M., Sr., 4,278,320, Cl. 350-26.000.
Dockner, Toni: *See—*
Kempe, Uwe; Dockner, Toni; Frank, Anton; and Karn, Helmut, 4,278,801, Cl. 548-342.000.
Dockx, Jozef C. J.: *See—*
Van der Veken, Guido J. L.; and Dockx, Jozef C. J., 4,278,684, Cl. 424-270.000.
Dr. Ing Rudolf Hell G.m.b.H.: *See—*
Schulz, Joachim, 4,279,003, Cl. 358-280.000.
Dr. Johannes Heidenhain GmbH: *See—*
Dangschat, Holmer, 4,278,031, Cl. 108-4.000.
Doerffer, Jerzy; Madey, Jerzy; Kozlowski, Jan; and Niepiekto, Andrzej, to Politechnika Gdanska. Braking rudder device. 4,278,040, Cl. 114-170.000.
Donarumma, Angelo; and Callahan, Thomas. Coffee infusion bag. 4,278,691, Cl. 426-80.000.
Dorrance, William H., to Organization Control Services, Inc. Method for producing oxygen and hydrogen from water. 4,278,650, Cl. 423-579.000.
Dostoomian, A. S., to Vanzetti Infrared & Computer Systems, Inc. Luminous clock display using optical fibers. 4,279,031, Cl. 368-82.000.
Dotson, Ronald L., to Olin Corporation. Electrolytic cell for purifying aqueous solutions of alkali metal hydroxides. 4,278,527, Cl. 204-272.000.
Douglas, Donald A.: *See—*
Rappas, Alkis S.; Menashi, Jameel; and Douglas, Donald A., 4,278,644, Cl. 423-58.000.
Douglas, Jack E.; and Bigley, Richard J., to Arthur Shaw Manufacturing Limited. Load supporting roller assemblies. 4,278,306, Cl. 308-6.00C.
Dow Chemical Company, The: *See—*
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Hefner, Robert E., Jr., 4,278,533, Cl. 209-166.000.
Swart, Daniel J.; and Kelyman, Jacqueline S., 4,278,787, Cl. 528-191.000.
Warren, Norman E., 4,278,778, Cl. 525-346.000.
Dowd, Anthony C. H.: *See—*
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Dozzi, Giovanni: *See—*
Cucinella, Salvatore; and Dozzi, Giovanni, 4,278,611, Cl. 260-448.0AD.
Dragerwerk Aktiengesellschaft: *See—*
McBride, William S., 4,278,637, Cl. 422-122.000.
Voigt, Gunter; and Boldt, Rainer, 4,278,636, Cl. 422-84.000.
Drake, Jerry D.; and Drake, Thomas L. Trailer. 4,278,375, Cl. 410-26.000.
Drake, Thomas L.: *See—*
Drake, Jerry D.; and Drake, Thomas L., 4,278,375, Cl. 410-26.000.
Dreamland Electrical Appliances Limited: *See—*
Cole, Graham M., 4,278,874, Cl. 219-505.000.
Dreiling, Sebastian E. Alignment bracket for drawer-guide systems. 4,278,309, Cl. 312-343.000.
Dresser Industries, Inc.: *See—*
Baron, George B., 4,278,393, Cl. 414-690.000.
Drew, Jeffrey M.: *See—*
Lubitz, Karl; Drew, Jeffrey M.; and Schuhmann, Werner P., 4,277,977, Cl. 73-587.000.
Drews, Ulrich: *See—*
Werner, Peter; and Drews, Ulrich, 4,278,061, Cl. 123-483.000.
Drexler, Jerome; and Bouldin, Eric W., to Drexler Technology Corporation. Process for making a reflective data storage medium. 4,278,758, Cl. 430-616.000.
Drexler, Jerome: *See—*
Bouldin, Eric W.; and Drexler, Jerome, 4,278,756, Cl. 430-414.000.
Drexler Technology Corporation: *See—*
Bouldin, Eric W.; and Drexler, Jerome, 4,278,756, Cl. 430-414.000.
Drexler, Jerome; and Bouldin, Eric W., 4,278,758, Cl. 430-616.000.
Drori, Mordeki. Back washing fluid filters. 4,278,540, Cl. 210-107.000.
Drummond, Russell F. Food product chiller. 4,277,954, Cl. 62-375.000.
Drzewiecki, Tadeusz M.; and Phillippi, Richard M., to United States of America, Army. Fluidic oil viscometer. 4,277,971, Cl. 73-55.000.
Dubin, Robert W.: *See—*
Briles, Wallace E.; and Dubin, Robert W., 4,278,115, Cl. 141-86.000.
Dubs, Bernard J.: *See—*
Lynn, Scott; and Dubs, Bernard J., 4,278,646, Cl. 423-226.000.
Dudis, Frank: *See—*
Creed, Gerald J.; Dudis, Frank; Edwards, William J.; and Hurler, Herbert T., 4,278,037, Cl. 112-168.000.
Dudt, Philip J., to Conoco, Inc. Methods for producing feedstock for a fixed bed gasifier from finely-divided coal. 4,278,447, Cl. 48-210.000.
Duerr, Peter C.: *See—*
De Facci, Claude; and Duerr, Peter C., 4,278,864, Cl. 219-75.000.
Dugan, William P., to General Dynamics, Pomona Division. Plug plating. 4,278,511, Cl. 204-15.000.
Dugge, Richard H.; and Schlobohm, Arnold, to ACF Industries, Inc. Automatic vacuum relief valve for hopper cars. 4,278,107, Cl. 137-526.000.
Duhe, Lance B. Pipe joint intersection contour scriber. 4,277,894, Cl. 33-21.00C.
Dumont, Claude: *See—*
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,278,677, Cl. 424-263.000.
Dunmire, Howard L.: *See—*
Horn, Stuart B.; Asher, Mark S.; and Dunmire, Howard L., 4,277,948, Cl. 62-6.000.
Dunn, George L., to SmithKline Corporation. 7-Alpha-oxyiminoacylcephalosporins. 4,278,670, Cl. 424-246.000.
Du Pont de Nemours, E. I., and Company: *See—*
Bettinger, George E.; Pohland, Hermann W.; and Applegate, Lynn E., 4,278,548, Cl. 210-636.000.
Fremont, Joseph M.; and Garnett, Donald I., 4,278,563, Cl. 252-441.000.

Gervay, Joseph E.; and Pilette, Yvan P., 4,278,752, Cl. 430-281.000.
Knight, Ernest, Jr., 4,278,661, Cl. 424-85.000.
Duracell International Inc.: *See*—
Athearn, Lee F., 4,278,744, Cl. 429-181.000.
Durckheimer, Walter; Bormann, Dieter; Ehlers, Eberhard; Schrinner, Elmar; and Heymes, Rene, to Hoechst Aktiengesellschaft. Cephem derivative. 4,278,793, Cl. 544-27.000.
Durenec, Peter, to United States of America, Army. Cryogenic cooler having telescoping multistage regenerator-displacers. 4,277,947, Cl. 62-6.000.
Durgarian, Sergei G.: *See*—
Nametkin, Nikolai S.; Durgarian, Sergei G.; Novitsky, Eduard G.; Filippova, Valentina G.; Gladkova, Natalya K.; and Teplyakov, Vladimir V., 4,278,774, Cl. 525-100.000.
Duro Metal Products Company: *See*—
Hall, Roy L., 4,277,990, Cl. 81-63.000.
Durr, Frederick E.: *See*—
Murdock, Keith C.; and Durr, Frederick E., 4,278,689, Cl. 424-330.000.
Durrell, Robert L.: *See*—
Hibbs, Joseph E.; Chalmers, Gerald W.; Durrell, Robert L.; and Smith, Walter C., 4,278,026, Cl. 102-254.000.
Dworak, Gert; and Aigner, Hansjorg, to Vianova Kunstharz, A.G. Polysiloxane-modified paint binders and process for producing the binders. 4,278,574, Cl. 260-22.0CB.
Dynamit Nobel AG: *See*—
Gebauer, Peter; and Sturm, Karl G., 4,278,769, Cl. 521-90.000.
E. J. Brooks Company: *See*—
Moberg, Sigurd M., 4,278,281, Cl. 292-320.000.
E. W. Mold & Tool Co. Inc.: *See*—
Wilds, Robert W.; Meyer, Robert E.; Grannen, Walter A., III; and Bryant, Dannie, 4,278,417, Cl. 425-577.000.
Eade, Robert A.; and Quaintance, Peter V. C. Concert shell. 4,278,145, Cl. 181-30.000.
Eagle Aircraft Co.: *See*—
Wilson, Weldon D., 4,278,221, Cl. 244-136.000.
Eagle-Picher Industries, Inc.: *See*—
Smith, Donald C.; and Hoffman, Jack D., 4,278,558, Cl. 252-186.000.
Easterling, Mahlon E.: *See*—
United States of America, National Aeronautics and Space Administration; Easterling, Mahlon E.; and Winkelstein, Robin A., 4,278,978, Cl. 343-100.0CL.
Eastern Company, The: *See*—
Lobello, John, 4,278,006, Cl. 411-47.000.
Eastman Kodak Company: *See*—
Baker, Charles W.; Wilson, Robert J.; and Kempf, Dale F., 4,278,338, Cl. 354-83.000.
Chen, Chung Y., 4,278,750, Cl. 430-218.000.
Clark, Gary T., 4,278,599, Cl. 260-207.000.
Fearnside, William T.; and Lee, Teh-Hsuang, 4,278,995, Cl. 358-54.000.
Hinshaw, Gerald C.; and Condit, Paul B., 4,278,598, Cl. 260-157.000.
Sidhu, Jasbir; Simons, Michael J.; and Mijovic, Miroslav V., 4,278,748, Cl. 430-212.000.
Specht, Donald P.; Payne, Kenneth L.; and Farid, Samir Y., 4,278,751, Cl. 430-281.000.
Ebneth, Harold, to Bayer Aktiengesellschaft. Process for the partial metallization of textile structures. 4,278,435, Cl. 8-471.000.
Edelman, Brian S.; and Robinson, Ralph L., Jr., to Ford Motor Company. Binary output processing in a digital computer using a time-sorted stack. 4,279,015, Cl. 364-200.000.
Edinen Centar Po Physika: *See*—
Antonov, Lyubomir Y., 4,278,838, Cl. 179-1.0SM.
Edwards, William J.: *See*—
Creed, Gerald J.; Dudis, Frank; Edwards, William J.; and Hurler, Herbert T., 4,278,037, Cl. 112-168.000.
Egawa, Takeshi: *See*—
Uchida, Isamu; Yamazaki, Yasuo; and Egawa, Takeshi, 4,278,339, Cl. 354-155.000.
Egger, Helmut; and Reinshagen, Hellmuth, to Sandoz Ltd. Substituted 14-desoxy-mutilin compositions. 4,278,674, Cl. 424-250.000.
Eggert, Walter S., Jr., to Budd Company, The. Resilient railway car truck suspension. 4,278,029, Cl. 105-224.100.
Eglington, Alfred J.: *See*—
Corbett, David F.; and Eglington, Alfred J., 4,278,686, Cl. 424-274.000.
Egnell, Rolf A.; and Hansson, Bengt L., to Kommanditbolaget United Stirling. Exhaust gas recirculation apparatus. 4,277,942, Cl. 60-517.000.
Ehlers, Eberhard: *See*—
Durckheimer, Walter; Bormann, Dieter; Ehlers, Eberhard; Schrinner, Elmar; and Heymes, Rene, 4,278,793, Cl. 544-27.000.
Eichbaum, Friedrich: *See*—
Bortz, Karl; Thesing, Heinrich; and Eichbaum, Friedrich, 4,278,296, Cl. 299-87.000.
Eichin, Harry P.: *See*—
Nausedas, Joseph A.; and Eichin, Harry P., 4,277,930, Cl. 53-396.000.
Eichinger, Hans; and Huebl, Julius, to Carl Hurth Maschinen- und Zahnradfabrik. Resilient railway truck articulated shaft housing. 4,278,028, Cl. 105-136.000.
Eichinger, Johann; and Huebl, Julius, to Carl Hurth Maschinen- und Zahnradfabrik. Resilient railway truck double axle drive. 4,278,027, Cl. 105-131.000.
Eiermann, Dankwart, to Borsig GmbH; and Wankel GmbH, a part interest. Compressor. 4,278,409, Cl. 418-61.00A.
Eigenbrod, Lester K.; Kidder, Gerald F.; and Zeunik, Robert L., to Union Carbide Corporation. Cryogenic liquid transfer termination apparatus. 4,277,950, Cl. 62-55.000.
Eilingsfeld, Heinz: *See*—
Hiller, Heinrich; Eilingsfeld, Heinz; Reinicke, Helmut; and Traub, Fritz, 4,278,606, Cl. 260-380.000.
Eis, Frederick G.; Bonney, Oren V.; and Sackett, Willard A., to Amstar Corporation. Separator employing an annular vertical feedwell with associated concentric annular baffle plate and method of using same to separate solids from liquids. 4,278,541, Cl. 210-112.000.
Ekman Engineering AG: *See*—
Ekman, Kjell R., 4,278,276, Cl. 285-49.000.
Ekman, Kjell R., to Ekman Engineering AG. Device for a coupling unit having connectable and disconnectable parts. 4,278,276, Cl. 285-49.000.
Electric Power Research Institute: *See*—
Chari, Madabushi V. K.; Jones, Donald W.; and Laskaris, Evangelos T., 4,278,905, Cl. 310-52.000.
Hingorani, Narain G., 4,278,832, Cl. 174-14.00R.
Levenson, Milton; and Zebroski, Edwin L., 4,278,559, Cl. 252-301.10R.
Eli Lilly and Company: *See*—
Flom, Merlyn G., 4,278,570, Cl. 252-546.000.
Thakkar, Arvind L., 4,278,603, Cl. 260-345.300.
Zimmerman, Dennis M., 4,278,797, Cl. 546-112.000.
Elie, Xavier: *See*—
Abramson, Roger; Delisle, Jean-Paul; Elie, Xavier; Salon, Guy; and Peyrelongue, Jean-Pierre, 4,278,499, Cl. 176-37.000.
Elineau, Hubert, to MecanARBED S.a.r.L. Method of and apparatus for stacking channel bars. 4,278,377, Cl. 414-30.000.
Eliscu, Joshua, to Elisola Enterprises, Inc. Table apparatus for holding and moving cels for producing animated motion pictures. 4,278,332, Cl. 352-87.000.
Elisola Enterprises, Inc.: *See*—
Eliscu, Joshua, 4,278,332, Cl. 352-87.000.
Elmi, Steele J., to Finetex, Inc. Antiperspirant composition. 4,278,655, Cl. 424-47.000.
Elmore, Charles E., to Vermont American Corporation. Storage means for removable tips for hand tool. 4,278,119, Cl. 145-62.000.
Elston, Lewis W.: *See*—
Hurst, David R.; and Elston, Lewis W., 4,278,450, Cl. 55-80.000.
Eltro GmbH Gesellschaft Fur Strahlungstechnik: *See*—
Bauer, Siegfried; and Burckhart, Dieter, 4,278,430, Cl. 434-2.000.
Elwell, John L., Jr., to United States of America, Air Force. Solvent mixture for dissolving and removing epoxy resinous compounds. 4,278,557, Cl. 252-171.000.
Emelyanov, Viktor I.: *See*—
Andronov, Valery A.; Boyarsky, Alexandr I.; Emelyanov, Viktor I.; and Nabutovsky, Iosif B., 4,279,009, Cl. 363-35.000.
Emerson Electric Co.: *See*—
Mitchell, Richard L.; Brundage, Richard B.; and Blachly, Donald L., 4,278,117, Cl. 144-144.00R.
Endo, Hiroshi: *See*—
Toriumi, Shiro; Saijo, Takao; Endo, Hiroshi; Kamimura, Kuniaki; and Saito, Takanori, 4,278,346, Cl. 355-45.000.
Engels, George. "Adjustment device for tool bit holders". 4,277,993, Cl. 82-37.000.
English Clays Lovering Pochin & Co., Ltd.: *See*—
Falcon-Steward, Hugh R., 4,278,208, Cl. 241-16.000.
Enjo, Naonori: *See*—
Hisamoto, Iwao; Enjo, Naonori; Maeda, Chiaki; Esaka, Takasige; Omure, Yukio; Iida, Toshihiko; and Aomi, Hideki, 4,278,552, Cl. 252-3.000.
Envirotech Corporation: *See*—
Rahman, Michael, 4,278,617, Cl. 261-30.000.
Era, Susumu: *See*—
Nanaumi, Ken; Shoji, Fusaji; Kohkame, Hisashi; and Era, Susumu, 4,278,786, Cl. 528-179.000.
Eranosian, Florence, executrix: *See*—
Eranosian, John, deceased, 4,278,386, Cl. 414-421.000.
Eranosian, John, deceased (by Eranosian, Florence, executrix). Structure for supporting cooking pot for re-fried beans. 4,278,386, Cl. 414-421.000.
Erbe Elektromedizin KG: *See*—
van Gerven, Hans, 4,278,090, Cl. 128-303.100.
Erickson, John W., to Kobe, Inc. Pumping stage for multi-stage centrifugal pump. 4,278,399, Cl. 415-199.100.
Erker, Joseph W., to Ohio Nuclear, Inc. Current amplifier with automatic drift correction for tomographic scanners. 4,278,889, Cl. 250-445.00T.
Ernest, Lorraine D. Slug trap. 4,277,907, Cl. 43-131.000.
Ernst, Horst M.: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,278,305, Cl. 308-6.00C.
Ersoy, Metin, to Schaeffer-Homberg GmbH. Machine for the attachment of buttons, rivets or the like. 4,278,194, Cl. 227-18.000.
Ertingshausen, Gerhard: *See*—
Law, Wai-Tak; and Ertingshausen, Gerhard, 4,278,440, Cl. 23-230.00B.
Esaka, Takasige: *See*—
Hisamoto, Iwao; Enjo, Naonori; Maeda, Chiaki; Esaka, Takasige; Omure, Yukio; Iida, Toshihiko; and Aomi, Hideki, 4,278,552, Cl. 252-3.000.

Espaignol, Jacques: *See—*
Cachier, Gerard; and Espaignol, Jacques, 4,278,951, Cl. 331-96.000.

Espenscheid, Wilton F.: *See—*
Yan, Tsoung-yuan; and Espenscheid, Wilton F., 4,278,292, Cl. 299-5.000.

Esper, Norbert: *See—*
Burba, Christian; Volland, Hans-Guenter; and Esper, Norbert, 4,278,713, Cl. 427-388.200.

Esposito, John W. Fishing chair. 4,278,289, Cl. 297-188.000.

Esthimer, William F.; Morin, Edward H.; and Trudell, Richard E., to Bird-Johnson Company. Control system for equalizing the torques of multiple engines driving a common load. 4,277,945, Cl. 60-710.000.

Estrada, Jose: *See—*
Florio, John D., 4,277,847, Cl. 2-12.000.

Etablissements Sim S.A.: *See—*
Segard, Yves-Andre, 4,277,914, Cl. 51-112.000.

Etat Francais represented by the Delegue General pour l'Armement: *See—*
Finance, Robert J., 4,278,219, Cl. 244-100.00R.

Ethyl Corporation: *See—*
Malec, Robert E., 4,278,554, Cl. 252-52.00R.
Zaiko, Edward J.; and Ranken, Paul F., 4,278,516, Cl. 204-158.0HA.
Zaweski, Edward F.; and Harstick, Christian S., 4,278,555, Cl. 252-52.00A.

Ethyl Products Company: *See—*
Kirk, Donald C., Jr., 4,278,189, Cl. 222-321.000.

Euteco Impianti S.p.A.: *See—*
Rottigni, Claudio; and Cardini, Giuliano, 4,278,764, Cl. 435-144.000.

Evans, Carroll F.: *See—*
Pearlstein, Fred; and Evans, Carroll F., 4,278,515, Cl. 204-55.00Y.

Evans, David N.: *See—*
Cassanelli, Robert R.; Wauters, Ronald P.; Cole, Richard A.; Evans, David N.; and Herbst, Darrel E., 4,278,692, Cl. 426-96.000.

Evans, Robert T.; and Giroux, Richard L., to Halliburton Company. Access valve for drill stem testing. 4,278,130, Cl. 166-332.000.

Evnochides, Steven K.: *See—*
Chien, James C. W.; Evnochides, Steven K.; and Howlett, Joseph A., 4,278,510, Cl. 204-14.00R.

Evtuhov, Viktor, to United States of America, Air Force. Autopointing laser system. 4,278,948, Cl. 331-94.50C.

Exxon Research & Engineering Co.: *See—*
Ver Strate, Gary; and Baldwin, Francis P., 4,278,822, Cl. 570-257.000.

Facet Enterprises, Inc.: *See—*
Mower, Michael L.; and Carleton, William A., 4,278,161, Cl. 192-84.00C.

Fachbach, Heinz: *See—*
List, Hans; Skatsche, Othmar; Thien, Gerhard; Fachbach, Heinz; Greier, Josef; and Wagner, Johann, 4,278,055, Cl. 123-195.00S.

Fadner, Thomas A., to Graphic Arts Technical Foundation. Substitutive additives for isopropyl alcohol in fountain solution for lithographic offset printing. 4,278,467, Cl. 106-2.000.

Faggian, Lucio; and Platone, Edoardo, to Anic S.p.A. Process for synthesizing pyran nitriles. 4,278,602, Cl. 260-345.100.

Fahmi, Ibrahim. Clothes hanger with multiple clothes supports. 4,278,177, Cl. 211-116.000.

Fahrenholtz, Kenneth E.; Guthrie, Robert W.; and Kierstead, Richard W., to Hoffmann-La Roche Inc. Adrenergic blocking agents. 4,278,608, Cl. 260-401.000.

Fairchild Camera and Instrument Corporation: *See—*
Crossley, Peter A., 4,277,882, Cl. 29-571.000.

Fairchild, Peter T.: *See—*
Leininger, Joel C.; Bliss, Floyd R.; and Fairchild, Peter T., 4,279,016, Cl. 364-200.000.

Fairfax Investment Corp.: *See—*
Thunell, Charles R., 4,278,395, Cl. 414-786.000.

Falcon-Steward, Hugh R., to English Clays Lovering Pochin & Co., Ltd. Comminution of materials. 4,278,208, Cl. 241-16.000.

Faneuf, Daniel. Identification card holder. 4,277,863, Cl. 24-3.00R.

Fansteel Inc.: *See—*
Heisner, Marvin M., 4,278,372, Cl. 408-183.000.

Farid, Samir Y.: *See—*
Specht, Donald P.; Payne, Kenneth L.; and Farid, Samir Y., 4,278,751, Cl. 430-281.000.

Farrell, Terry J.: *See—*
Roth, Helmut; and Farrell, Terry J., 4,278,159, Cl. 192-58.00B.

Fauteux, Denis J. Self supporting stand for hand held hair drier. 4,278,223, Cl. 248-125.000.

Fava, Ronald A., to Arco Polymers, Inc. Maleimide-styrene copolymer blend with polyphenylene oxide. 4,278,775, Cl. 525-132.000.

Fearnside, William T.; and Lee, Teh-Hsuang, to Eastman Kodak Company. Color line sensor for use in film scanning apparatus. 4,278,995, Cl. 358-54.000.

Feeman, James F.: *See—*
Wineholt, Robert L.; and Feeman, James F., 4,278,616, Cl. 260-512.00C.

Feitzelmayer, Ernst: *See—*
Bauer, Heinrich F.; and Feitzelmayer, Ernst, 4,277,886, Cl. 29-860.000.

Feld, Gerhard: *See—*
Schmidt-Kufeke, Klaus-Peter; and Feld, Gerhard, 4,278,871, Cl. 219-384.000.

Felder, Ernst; and Pitre, Davide, to Bracco Industria Chimica S.p.A. Method of preparing a 3-alkoxy-2-alkyl-propionic acid ester derivative and intermediate therefor. 4,278,808, Cl. 560-183.000.

Felice, Dan C.: *See—*
Daley, Philip A.; Mouhot, Allan R.; and Felice, Dan C., 4,278,148, Cl. 182-181.000.

Fels, Karl. Load transport carriage. 4,278,283, Cl. 296-26.000.

Fetterman, Harold R.: *See—*
Chiao, Raymond Y.; Fetterman, Harold R.; and Schlossberg, Howard R., 4,278,953, Cl. 332-7.510.

Fiat Auto S.p.A.: *See—*
Povero, Mario, 4,277,941, Cl. 60-307.000.

Fiat Societa Per Azioni: *See—*
Martinelli, Gabriele, 4,278,401, Cl. 416-230.000.

Fiat Trattori S.p.A.: *See—*
Perin, Philippe, 4,278,144, Cl. 180-329.000.

Fichot, Julie Y., to General Electric Company. Low thermal resistance, low stress semiconductor package. 4,278,990, Cl. 357-81.000.

Fiedler, Eberhard: *See—*
Ahlborn, Gunther; Fiedler, Eberhard; Hubsch, Henry; and Kramer, Rolf, 4,278,030, Cl. 105-208.100.

Fierfort, Claude: *See—*
Bonnet, Jean-Loup; and Fierfort, Claude, 4,278,942, Cl. 324-347.000.

Filippova, Valentina G.: *See—*
Nametkin, Nikolai S.; Durgarian, Sergei G.; Novitsky, Eduard G.; Filippova, Valentina G.; Gladkova, Natalya K.; and Teplyakov, Vladimir V., 4,278,774, Cl. 525-100.000.

Filss, Peter, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of purifying hot gases. 4,278,645, Cl. 423-210.000.

Finance, Robert J., to Etat Francais represented by the Delegue General pour l'Armement. Device for detecting hard landings. 4,278,219, Cl. 244-100.00R.

Finetex, Inc.: *See—*
Elmi, Steele J., 4,278,655, Cl. 424-47.000.

Firestone Tire & Rubber Company, The: *See—*
McDonald, Peter, 4,278,121, Cl. 152-209.00R.

First Champaign Corporation: *See—*
Cummings, Kenneth W.; and Perethian, Charles M., 4,278,285, Cl. 296-78.100.

Fischer, Charles P.: *See—*
Gallusser, David O.; Frear, David L.; and Fischer, Charles P., 4,278,317, Cl. 339-258.00R.

Fisher, Charles B.; and Fisher, Sidney T. Quantized angle modulator. 4,278,952, Cl. 332-1.000.

Fisher, Sidney T.: *See—*
Fisher, Charles B.; and Fisher, Sidney T., 4,278,952, Cl. 332-1.000.

Fitzpatrick, John A.; and Fitzpatrick, Susan B. Photographic image painting process. 4,278,022, Cl. 101-129.000.

Fitzpatrick, Susan B.: *See—*
Fitzpatrick, John A.; and Fitzpatrick, Susan B., 4,278,022, Cl. 101-129.000.

Flammer, Charles M.: *See—*
Friedman, Ernest H.; Flammer, Charles M.; Baker, Daniel A.; and Vamvakas, Spiro, 4,278,096, Cl. 128-695.000.

Flippin, James S., to J. I. Case Company. Hydraulic control system for excavating machine. 4,277,898, Cl. 37-86.000.

Flom, Merlyn G., to Eli Lilly and Company. Cosmetic cleanser formulation. 4,278,570, Cl. 252-546.000.

Florent, Gerard: *See—*
Lobmann, Michele; and Florent, Gerard, 4,278,662, Cl. 424-89.000.

Florio, John D., to Estrada, Jose. Headband for joggers. 4,277,847, Cl. 2-12.000.

Fluid Data Systems: *See—*
Glassey, Gene, 4,277,981, Cl. 73-701.000.

Fluid and Electric Control Company: *See—*
Weaver, Richard A., 4,278,015, Cl. 100-53.000.

Fogg, Lawrence C.: *See—*
Toy, Madeline S.; Stringham, Roger S.; and Fogg, Lawrence C., 4,278,703, Cl. 427-54.100.

Folz, Raymond L. Remote volume control for television set. 4,278,997, Cl. 358-194.100.

Food Automation-Service Techniques, Inc.: *See—*
Koether, Bernard G.; and Matison, Gary G., 4,278,872, Cl. 219-497.000.

Forberg, Halvor G. Method of mixing particulate components. 4,278,355, Cl. 366-300.000.

Ford, Harold H., to Acme General Corporation. Storage tray. 4,278,196, Cl. 229-30.000.

Ford Motor Company: *See—*
Edelman, Brian S.; and Robinson, Ralph L., Jr., 4,279,015, Cl. 364-200.000.
Mikkor, Mati; and Shinozaki, Samuel S., 4,278,708, Cl. 427-126.100.

Forrest, Charles P. Neck exercising device. 4,278,249, Cl. 272-94.000.

Forsythe, Calvin C.: *See—*
Wood, Loren E.; Allen, Jerome D.; Clift, Miner E.; Kays, Jerry W.; and Forsythe, Calvin C., 4,278,181, Cl. 220-89.00A.

Fowler, Richard A.: *See—*
Waymouth, John F.; Bouchard, Andre C.; Fowler, Richard A.; and Hall, Harold H., Jr., 4,278,310, Cl. 316-24.000.

Frank, Anton: *See—*
Kempe, Uwe; Dockner, Toni; Frank, Anton; and Karn, Helmut, 4,278,801, Cl. 548-342.000.

Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., to United States of America, Agriculture. Process for the preparation of

tris(aminomethyl)phosphine oxide and its ternary salts. 4,278,811, Cl. 564-15.000.
Franssen, Johannes P. T.: *See*—
Vrijssen, Gerardus A. H. M.; and Franssen, Johannes P. T., 4,278,912, Cl. 313-331.000.
Frear, David L.: *See*—
Gallusser, David O.; Frear, David L.; and Fischer, Charles P., 4,278,317, Cl. 339-258.00R.
Frederiksen, Christopher W.: *See*—
Cho, Iue C.; Frederiksen, Christopher W.; and Hoer, Ralph A., 4,278,597, Cl. 260-123.500.
Freedman, Robert, to Shell Oil Company. High frequency induction log for determining resistivity and dielectric constant of the earth. 4,278,941, Cl. 324-341.000.
Frehner, Stanford. Retaining ties. 4,278,364, Cl. 405-273.000.
Fremery, Max: *See*—
Korff, Joachim; Fremery, Max; and Zimmermann, Johannes, 4,278,819, Cl. 568-594.000.
Fremont, Joseph M.; and Garnett, Donald I., to Du Pont de Nemours, E. I., and Company. Copper chloride containing catalysts for the preparation of furan compounds. 4,278,563, Cl. 252-441.000.
French, Larry A., to Davis, French and Associates, Inc. Remote marking tool. 4,278,044, Cl. 118-256.000.
Freund, William P.; and Hulvey, Stephen R., to Alloy Engineering Company, The. Bell-type coil annealing furnace inner cover. 4,278,242, Cl. 266-263.000.
Frichette, Ross S.; Grambo, Ronald E.; Biggs, Robert W.; and Healy, Thomas A., deceased (by Healy, Antoinette M., executrix), to S. K. Wellman Corp., The. Friction disc. 4,278,162, Cl. 192-107.00C.
Friedman, Ernest H.; Flammer, Charles M.; Baker, Daniel A.; and Vamvakas, Spiro, to Friedman, Ernest H. Coronary artery disease diagnosis method. 4,278,096, Cl. 128-695.000.
Friedrich Wilh. Schwing GmbH: *See*—
Guthoff, Wilfried, 4,277,899, Cl. 37-103.000.
Fritzvold, Bjorn H., to Myrens Verksted A/S. Method for bleaching pulp with ozone. 4,278,496, Cl. 162-19.000.
Frosch, Robert A.: *See*—
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Fry, Timothy S., to GKN Group Services Limited. Sprung vehicles. 4,278,270, Cl. 280-675.000.
Fuhrmann, Wolfgang: *See*—
Zurner, Hansjurgen; and Fuhrmann, Wolfgang, 4,278,233, Cl. 251-57.000.
Fuji Electric Co., Ltd.: *See*—
Kandatsu, Kiyoshi, 4,278,958, Cl. 335-16.000.
Fuji Photo Film Co., Ltd.: *See*—
Mukunoki, Yasuo; Yoneyama, Masakazu; Yamaguchi, Jiro; Naito, Hideki; and Sasaki, Jun, 4,278,757, Cl. 430-512.000.
Okamoto, Yoshihiko; Yoshizawa, Tamotu; Ohta, Takahiro; and Murata, Koichi, 4,278,347, Cl. 355-68.000.
Fujii, Akira, to Stanley Drug Products, Inc. Method of treating a water soluble capsule. 4,278,633, Cl. 264-134.000.
Fujimaki, Hiroto: *See*—
Noguchi, Kazuo; Fujimaki, Hiroto; Tagaya, Kiyoshi; Ajima, Shigetoshi; Takada, Kazutoshi; and Okuda, Kensuke, 4,278,584, Cl. 260-38.000.
Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, to Taiho Pharmaceutical Company, Limited. Pharmaceutical composition and methods of use containing 1,1,3,5-substituted biuret compound. 4,278,672, Cl. 424-248.400.
Fujisaki, Hitoshi, to Hitachi Denshi Kabushiki Kaisha. Suppressed carrier modulator using differential amplifier. 4,278,954, Cl. 332-9.00T.
Fujita, Makoto; Omiya, Shoji; and Hino, Izumi, to Matsushita Electric Industrial Co., Ltd. Container for holding at least one recording disk and disk playing system. 4,278,258, Cl. 369-36.000.
Fujita, Masanori: *See*—
Oda, Hajime; Fujita, Masanori; and Moritani, Nakanobu, 4,279,029, Cl. 368-29.000.
Fujito, Katsuyuki: *See*—
Nakayama, Yoshikazu; Tateishi, Fumikazu; and Fujito, Katsuyuki, 4,278,318, Cl. 350-3.780.
Fujitsu Limited: *See*—
Baba, Fumio; Miyasaka, Kiyoshi; Yabu, Takashi; and Mogi, Junichi, 4,278,989, Cl. 357-59.000.
Ohno, Kenichi; Hosomizu, Tohru; and Nawata, Kazumasa, 4,278,897, Cl. 307-455.000.
Fukazawa, Kazuo; and Yamada, Akira, to RCA Corporation. Video disc locked groove clearance system. 4,278,846, Cl. 369-128.000.
Fukuda, Tadaji; and Sugiura, Susumu, to Canon Kabushiki Kaisha. Photoelectric information input apparatus. 4,279,000, Cl. 358-213.000.
Fukutome, Hiroshi: *See*—
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Funk, Ernest J.; Wing, Thomas; Lane, Jack C.; and Westbrook, Edward S., IV, to Quintel Corporation. Locking mechanism for use in a chuck for an optical alignment and exposure apparatus. 4,278,348, Cl. 355-73.000.
Furukawa Electric Co. Ltd.: *See*—
Matsui, Kazumi; Takasue, Takashi; and Iwasaki, Masami, 4,278,164, Cl. 198-334.000.
Furutani, Toshinobu: *See*—
Otsuka, Yasuhiro; Hori, Ryuzo; Matsumoto, Shinichi; Uchida, Kiyoshi; and Furutani, Toshinobu, 4,278,509, Cl. 204-1.00T.
Futaba Denshi Kogyo K.K.: *See*—
Kobori, Youichi, 4,278,917, Cl. 315-169.100.
G.A.O. Gesellschaft fur Automation und Organisation mbH: *See*—
Hoppe, Joachim; Haghiri-Tehrani, Yahya; and Gauch, Wolfgang, 4,278,722, Cl. 428-192.000.
GAF Corporation: *See*—
Tracy, David J., 4,278,821, Cl. 568-723.000.
Galileo Electro-Optics Corp.: *See*—
Tosswill, Christopher H., 4,278,891, Cl. 250-505.000.
Gallusser, David O.; Frear, David L.; and Fischer, Charles P., to Bendix Corporation, The. Formed socket contact with reenforcing ridge. 4,278,317, Cl. 339-258.00R.
Ganguly, Biswa N.; and Paranjpe, Suresh C., to Mead Corporation, The. Moving image scanner. 4,278,999, Cl. 358-213.000.
Gannon, Richard E.: *See*—
Stickler, David B.; Von Rosenberg, Charles W., Jr.; and Gannon, Richard E., 4,278,445, Cl. 48-197.00R.
Von Rosenberg, Charles W., Jr.; Stickler, David B.; and Gannon, Richard E., 4,278,446, Cl. 48-197.00R.
Ganzala, Gary W.: *See*—
Chrisman, Max G.; Ganzala, Gary W.; and Tiede, Ralph L., 4,278,460, Cl. 65-134.000.
Garagnani, Enea: *See*—
Marzola, Roberto; and Garagnani, Enea, 4,278,586, Cl. 260-42.180.
Garcia, Juan M.; and Spector, George. Soccer kicking aid. 4,278,257, Cl. 273-411.000.
Gardel, William: *See*—
Mizoule, Henri; and Gardel, William, 4,277,911, Cl. 46-135.00R.
Gardner, Donald M.: *See*—
Heaps, John F.; and Gardner, Donald M., 4,278,782, Cl. 526-326.000.
Gargrave, Robert J. Matrix element. 4,277,994, Cl. 83-133.000.
Garnett, Donald I.: *See*—
Fremont, Joseph M.; and Garnett, Donald I., 4,278,563, Cl. 252-441.000.
Garsky, Victor M., to American Home Products Corporation. Analgesic pentapeptides. 4,278,596, Cl. 260-112.50R.
Gauch, Wolfgang: *See*—
Hoppe, Joachim; Haghiri-Tehrani, Yahya; and Gauch, Wolfgang, 4,278,722, Cl. 428-192.000.
Gaudette, Andrew J.: *See*—
Haney, Donald J.; and Gaudette, Andrew J., 4,278,016, Cl. 100-224.000.
GCA Corporation: *See*—
Loveless, W. L.; Trott, Richard J.; Heath, Robert H.; and Glick, William L., 4,278,366, Cl. 406-88.000.
Gearhart, Junior A., to Kerr-McGee Refining Corporation. Process for separating bituminous materials with solvent recovery. 4,278,529, Cl. 208-309.000.
Geary, Frederick J.: *See*—
Bechtel, Jon H.; and Geary, Frederick J., 4,278,419, Cl. 431-24.000.
Gebauer, Peter; and Sturm, Karl G., to Dynamit Nobel AG. Blowing agent concentrate. 4,278,769, Cl. 521-90.000.
Gebr. Hofmann GmbH & Co. KG: *See*—
Mueller, Richard; and Himmler, Guenther, 4,277,976, Cl. 73-457.000.
Gehrke, Gunter: *See*—
Seidler, Helmut; and Gehrke, Gunter, 4,278,607, Cl. 260-383.000.
Geiser, Milton L., to Kerr Glass Manufacturing Corporation. Child-resistant closure and container. 4,278,178, Cl. 215-215.000.
General Battery Corporation: *See*—
Oxenreider, Terry R.; and Bush, Herbert A., Jr., 4,278,742, Cl. 429-88.000.
General Dynamics, Pomona Division: *See*—
Dugan, William P., 4,278,511, Cl. 204-15.000.
General Electric Company: *See*—
Asbby, Bruce A.; and Schroeter, Siegfried H., 4,278,804, Cl. 556-436.000.
DiBattista, Dante P.; and Kuhn, Robert H., 4,278,245, Cl. 269-22.000.
Fichot, Julie Y., 4,278,990, Cl. 357-81.000.
Gowdy, Harold W., 4,277,900, Cl. 38-77.830.
Hull, Peter R., 4,278,398, Cl. 415-160.000.
Metoff, Rudolph, 4,278,911, Cl. 313-318.000.
Milkovic, Miran, 4,278,940, Cl. 324-127.000.
Petrides, Christie, 4,278,873, Cl. 219-501.000.
Pinkham, Clinton L., 4,277,975, Cl. 73-362.0AR.
Puckette, Charles M., 4,277,978, Cl. 73-632.000.
General Foods Corporation: *See*—
Cassanelli, Robert R.; Wauters, Ronald P.; Cole, Richard A.; Evans, David N.; and Herbst, Darrel E., 4,278,692, Cl. 426-96.000.
General Motors Corporation: *See*—
Cymbal, William D.; and Kimberlin, Dan R., 4,278,154, Cl. 192-4.00A.
Demido, Michael, 4,278,009, Cl. 91-47.000.
General Signal Corporation: *See*—
Werych, Ewald R., 4,278,877, Cl. 219-544.000.
Georg Fischer Aktiengesellschaft: *See*—
Bass, Dieter, 4,277,918, Cl. 51-415.000.
Buhrer, Erwin, 4,278,125, Cl. 164-412.000.
Georgia Tech Research Institute: *See*—
Hurst, David R.; and Elston, Lewis W., 4,278,450, Cl. 55-80.000.
Geri, Sergio: *See*—
Mauro, Gastone; Lagana, Carlo; Geri, Sergio; and Strepparola, Ezio, 4,278,776, Cl. 525-178.000.

Gervay, Joseph E.; and Pilette, Yvan P., to Du Pont de Nemours, E. I., and Company. Flame retardant radiation sensitive element. 4,278,752, Cl. 430-281.000.

Gestaut, Lawrence J., to Diamond Shamrock Corporation. Oxygen cathode for alkali-halide electrolysis cell. 4,278,525, Cl. 204-265.000.

Getwent Gesellschaft fur Technische und wissenschaftliche Energieumsatzehtwicklungen m.b.H.: *See*—
Bachl, Herbert, 4,278,397, Cl. 415-83.000.

Ghebresillassie, Francesco. Thermos jar carrier & lunch tray. 4,278,172, Cl. 206-544.000.

Gianfranco, Velo D. Three-dimensional componental module at "T" modified for the industrial preformation of buildings. 4,277,921, Cl. 52-79.400.

Giardino, David A., to Chicago Pneumatic Tool Company. Overspeed control means for pneumatic tools. 4,278,103, Cl. 137-50.000.

Giardino, Nicholas A.: *See*—
Kuehnle, Manfred R.; Hagenlocher, Arno K.; and Giardino, Nicholas A., 4,278,528, Cl. 204-298.000.

Gibson, James O.; and Gibson, Mark G. Production of carbon fiber-tantalum carbide composites. 4,278,729, Cl. 428-368.000.

Gibson, Mark G.: *See*—
Gibson, James O.; and Gibson, Mark G., 4,278,729, Cl. 428-368.000.

Gilardini S.p.A.: *See*—
Nardi, Giovanni, 4,278,455, Cl. 55-337.000.

Gilbert, Harold J. Board game apparatus. 4,278,255, Cl. 273-248.000.

Gillette Company, The: *See*—
Breuer, Miklos M., 4,278,659, Cl. 424-71.000.

Gingerich, Richard G. W.: *See*—
Vanderpool, Clarence D.; MacInnis, Martin B.; McClintic, Robert P.; and Gingerich, Richard G. W., 4,278,463, Cl. 75-0.50A.

Ginsberg, Guenter: *See*—
Hodgins, Bruce J.; Saltz, Ivan K.; and Ginsberg, Guenter, 4,278,086, Cl. 128-224.000.

Giroux, Richard L.: *See*—
Evans, Robert T.; and Giroux, Richard L., 4,278,130, Cl. 166-332.000.

Gittler, Max, to Aladdin Toy Motors, Inc. Translationally movable idler gear as clutch for spring driven motor. 4,278,149, Cl. 185-39.000.

Givaudan Corporation: *See*—
Lamparsky, Dietmar, 4,278,817, Cl. 568-374.000.

GKN Group Services Limited: *See*—
Fry, Timothy S., 4,278,270, Cl. 280-675.000.

Gladkova, Natalya K.: *See*—
Nametkin, Nikolai S.; Durgarian, Sergei G.; Novitsky, Eduard G.; Filippova, Valentina G.; Gladkova, Natalya K.; and Teplyakov, Vladimir V., 4,278,774, Cl. 525-100.000.

Glassey, Gene, to Fluid Data Systems. Lead screw actuated fluid gauge. 4,277,981, Cl. 73-701.000.

Gleason Works, The: *See*—
Spear, Gilmore M., 4,278,370, Cl. 407-115.000.

Glick, William L.: *See*—
Loveless, W. L.; Trott, Richard J.; Heath, Robert H.; and Glick, William L., 4,278,366, Cl. 406-88.000.

Glickler, Sheldon L.: *See*—
Ahouse, David R.; Daugherty, Jack D.; Glickler, Sheldon L.; Kellen, Paul F.; Sutton, George W.; Korff, David; and Yoder, Marvel J., 4,278,950, Cl. 331-94.50G.

Glosmann, Josef: *See*—
Bardenhagen, Dietrich; Raschka, Wolfgang; Glosmann, Josef; and Tolasch, Gerhard, 4,278,385, Cl. 414-419.000.

Godejahn, Gordon C., Jr., to Rockwell International Corporation. Process for fabrication of high density VLSI circuits, having self-aligned gates and contacts for FET devices and conducting lines. 4,277,881, Cl. 29-571.000.

Godfrey, James W.: *See*—
Arnett, Coleman C.; Godfrey, James W.; and Miller, Mark R., 4,278,968, Cl. 340-545.000.

Golan, Kenneth F.; and Winzeler, James E., to Caterpillar Tractor Co. Draw works transmission control. 4,278,155, Cl. 192-4.00R.

Goldman, Theodore D., to Rohm and Haas Company. Isolation and improvement of impact modifier polymer powders. 4,278,576, Cl. 260-23.0AR.

Gonzalez, Claude A.: *See*—
Seguela, Marie-Claude J.; Betton, Rene F.; and Gonzalez, Claude A., 4,278,387, Cl. 414-462.000.

Goodyear Aerospace Corporation: *See*—
Venkatu, Doulatabad A., 4,278,153, Cl. 188-251.00M.

Gorike, Rudolf, to AKG Akustische u. Kino-Gertate Gesellschaft m.b.H. Earphone construction. 4,278,852, Cl. 179-182.00R.

Gorzel, Dieter: *See*—
Brabetz, Hartmut; Schafer, Heinz; and Gorzel, Dieter, 4,278,727, Cl. 428-290.000.

Goss, Harold R.; and Rebish, Edward J., to Acme-Cleveland Corporation. Simplified foundry core making machine and method. 4,278,123, Cl. 164-28.000.

Gotberg, John, to Gotbert Patent Company. Drawer associating construction. 4,278,308, Cl. 312-330.00R.

Gotbert Patent Company: *See*—
Gotberg, John, 4,278,308, Cl. 312-330.00R.

Goto, Satoshi; Takei, Yoshiaki; Imaho, Ichiro; and Nomori, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Photosensitive elements for electrophotography. 4,278,746, Cl. 430-59.000.

Gotoh, Norio: *See*—
Watanabe, Junichi; Aoyama, Takahiko; and Gotoh, Norio, 4,278,147, Cl. 181-256.000.

Gould Inc.: *See*—
Halasz, Laszlo, 4,278,983, Cl. 346-140.00R.
Wu, Jiing-Liang, 4,278,860, Cl. 200-148.00R.

Goupy, Marcel: *See*—
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Gowdy, Harold W., to General Electric Company. Iron steam chamber construction. 4,277,900, Cl. 38-77.830.

Graf, Gerhard: *See*—
Hill, Bernhard; Schmidt, Klaus P.; and Graf, Gerhard, 4,278,981, Cl. 346-108.000.

Graham, James R.: *See*—
Hatfield, James R.; Moseman, Merlin H.; Graham, James R.; and Hirt, Thomas J., 4,278,788, Cl. 528-494.000.

Grambo, Ronald E.: *See*—
Frichette, Ross S.; Grambo, Ronald E.; Biggs, Robert W.; and Healy, Thomas A., deceased, 4,278,162, Cl. 192-107.00C.

Grannen, Walter A., III: *See*—
Wilds, Robert W.; Meyer, Robert E.; Grannen, Walter A., III; and Bryant, Dannie, 4,278,417, Cl. 425-577.000.

Granzow, Albrecht H., to American Cyanamid Company. Phosphine oxide flame retarded, rubber-modified, polyphenylene ether resin compositions. 4,278,588, Cl. 260-45.70P.

Granzow, Albrecht H., to American Cyanamid Company. Flame retardant poly(butylene terephthalate) composition. 4,278,591, Cl. 260-45.75D.

Graphic Arts Technical Foundation: *See*—
Fadner, Thomas A., 4,278,467, Cl. 106-2.000.

Gravi-Mechanics Co.: *See*—
Dedolph, Richard R., 4,278,625, Cl. 264-39.000.

Grebe, Karl, to Rockwell-Golde, G.m.b.H. Assembly for generating adjustment movements at automobile ventilation devices. 4,278,922, Cl. 318-264.000.

Gregor, Robert A.; and Morgan, Ned L., to Bucyrus-Erie Company. Tread belt and drive having involute gear drive. 4,278,301, Cl. 305-11.000.

Greier, Josef: *See*—
List, Hans; Skatsche, Othmar; Thien, Gerhard; Fachbach, Heinz; Greier, Josef; and Wagner, Johann, 4,278,055, Cl. 123-195.00S.

Grey, Donald M., to Sperry Corporation. Bale wagon. 4,278,379, Cl. 414-44.000.

Griffiths, Trevor J.; Sharpe, Raymond; and Hunt, Peter, to Lucas Industries Limited. Electric generator arrangement. 4,278,928, Cl. 322-29.000.

Grim, George B.: *See*—
Belke, William H.; and Grim, George B., 4,277,938, Cl. 60-39.350.

Grohe, Lester R., to Northrop Corporation. Axial gap permanent magnet motor. 4,278,927, Cl. 318-721.000.

Gruen, Dieter M.; Krauss, Alan R.; and Siskind, Barry, to United States of America, Energy. Method and means of directing an ion beam onto an insulating surface for ion implantation or sputtering. 4,278,890, Cl. 250-492.00B.

Gruner, Johannes: *See*—
Traxler, Peter; Gruner, Johannes; and Nuesch, Jakob, 4,278,665, Cl. 424-181.000.

Grunner, Erich. Apparatus for molding tires of motor vehicles. 4,278,416, Cl. 425-577.000.

GTE Automatic Electric Laboratories, Inc.: *See*—
Rogers, Robert G., 4,278,930, Cl. 323-285.000.

GTE Laboratories Incorporated: *See*—
Natansohn, Samuel; and Su, Sophia R., 4,278,643, Cl. 423-54.000.
Regan, Robert J.; and Haugsjaa, Paul O., 4,278,916, Cl. 315-92.000.
Stobbs, William, 4,278,985, Cl. 357-15.000.

GTE Products Corporation: *See*—
Bouchard, Andre C.; and Jirmanus, Naila S., 4,278,420, Cl. 431-362.000.
Keeffe, William M.; and Brown, David R., 4,278,910, Cl. 313-220.000.
MacInnis, Martin B.; and Kim, Tai K., 4,278,642, Cl. 423-54.000.
Rebentisch, Hugo E.; and Tuday, Thomas, 4,278,228, Cl. 248-548.000.
Vanderpool, Clarence D.; MacInnis, Martin B.; McClintic, Robert P.; and Gingerich, Richard G. W., 4,278,463, Cl. 75-0.50A.
Waymouth, John F.; Bouchard, Andre C.; Fowler, Richard A.; and Hall, Harold H., Jr., 4,278,310, Cl. 316-24.000.

Guarino, Nicholas, to Varian Associates, Inc. Lock and elevator arrangement for loading workpieces into the work chamber of an electron beam lithography system. 4,278,380, Cl. 414-217.000.

Gueritee, Nicolas. Pure 17 alpha-ethynyl(5 alpha), androst-2-ene,17 beta-cl, process for its preparation and therapeutical applications of the same. 4,278,668, Cl. 424-238.000.

Guiguizian, Jacques: *See*—
Burgess, Francis P.; Cormier, Raymond G.; Guiguizian, Jacques; and Lutz, Leo O., 4,278,341, Cl. 355-3.0SH.

Guillaume, Jacques: *See*—
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Gulf Oil Corporation: *See*—
Chien, James C. W.; Evnochides, Steven K.; and Howlett, Joseph A., 4,278,510, Cl. 204-14.00R.

Gulf Research & Development Company: *See*—
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Gunnewig, Hubert, to Westfalia Separator AG. Continuously operating centrifugal separator drum for the concentration of suspended solids. 4,278,200, Cl. 233-16.000.

Gusyatiner, Mikhail M.: *See*—
Debabov, Vladimir G.; Kozlov, Jury I.; Zhdanova, Nelli I.; Khurges, Evgeny M.; Yankovsky, Nikolai K.; Rozinov, Mikhail N.; Shakulov, Rustem S.; Rebentish, Boris A.; Livshits, Vitaly A.; Gusyatiner, Mikhail M.; Mashko, Sergei V.; Moshentseva, Vera N.; Kozyreva, Ljudmila F.; and Arsatiants, Raisa A., 4,278,765, Cl. 435-172.000.

Gutehoffnungshutte Stockrade AG: *See*—
van der Piepen, Rolf; and Vollhardt, Frohmut, 4,278,451, Cl. 55-227.000.

Guthlein, Werner: *See*—
Berger, Dieter; Braun, Franz; Guthlein, Werner; Kuhr, Manfred; and Werner, Wolfgang, 4,278,763, Cl. 435-23.000.

Guthoff, Wilfried, to Friedrich Wilh. Schwing GmbH. Excavating machine with position indication of its work implement. 4,277,899, Cl. 37-103.000.

Guthrie, Robert W.: *See*—
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; and Kierstead, Richard W., 4,278,608, Cl. 260-401.000.

H. Lundbeck & Co. A/S: *See*—
Krogsgaard-LarsenPovl, 4,278,676, Cl. 424-256.000.

Haas, Howard C.; Jasne, Stanley J.; and Moreau, Robert D., to Polaroid Corporation. Preparation of 2-Methylene-1,3-propanediamide. 4,278,803, Cl. 556-419.000.

Habich, Adolph B.; and Hunt, Ronald E., to International Business Machins Corporation. Daisy wheel printer carrier. 4,278,356, Cl. 400-59.000.

Hackforth GmbH & Co. KG: *See*—
Hackforth, Josef; and Walter, Jurgen, 4,277,958, Cl. 64-11.00R.

Hackforth, Josef; and Walter, Jurgen, to Hackforth GmbH & Co. KG. Flexible shaft coupling. 4,277,958, Cl. 64-11.00R.

Hagemeister, Frederick C.: *See*—
Mueller, Edward E.; Harrod, Michael K.; and Hagemeister, Frederick C., 4,278,383, Cl. 414-412.000.

Hagenlocher, Arno K.: *See*—
Kuehnle, Manfred R.; Hagenlocher, Arno K.; and Giardino, Nicholas A., 4,278,528, Cl. 204-298.000.

Haggar, Jan. Fluid specimen holder for biological fluid testing. 4,278,437, Cl. 23-230.00B.

Haghiri-Tehrani, Yahya: *See*—
Hoppe, Joachim; Haghiri-Tehrani, Yahya; and Gauch, Wolfgang, 4,278,722, Cl. 428-192.000.

Halasz, Laszlo, to Gould Inc. Ink jet writing device. 4,278,983, Cl. 346-140.00R.

Hales, Richard H., to Becton Dickinson & Company. Supported receptor and use thereof in an assay. 4,278,651, Cl. 424-1.000.

Hall, Harold H., Jr.: *See*—
Waymouth, John F.; Bouchard, Andre C.; Fowler, Richard A.; and Hall, Harold H., Jr., 4,278,310, Cl. 316-24.000.

Hall, John B.: *See*—
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,278,569, Cl. 252-522.00R.

Hall, Roy L., to Duro Metal Products Company. Ratchet wrench. 4,277,990, Cl. 81-63.000.

Hallbert, Charles G.: *See*—
Lobo, Gustavo, Jr.; and Hallbert, Charles G., 4,278,209, Cl. 241-30.000.

Halle, Reidar; and Peterson, David, to Argus Chemical Corporation. 2-Chloro-2-alkyl substituted peroxyesters. 4,278,612, Cl. 260-453.0RZ.

Halliburton Company: *See*—
Evans, Robert T.; and Giroux, Richard L., 4,278,130, Cl. 166-332.000.

Hamazaki, Yasuhiko; Seri, Kenji; Ishiyama, Nobuo; Yamamoto, Toshiyuki; Sakasai, Masao; and Sato, Reiko, to Kaken Chemical Co., Ltd. Substituted oxy-cyclohexylacetic acid derivatives. 4,278,678, Cl. 424-263.000.

Hamilton, Joel A.: *See*—
Mahaffy, Reid A.; and Hamilton, Joel A., 4,277,931, Cl. 53-412.000.

Hamm, Robert A.; and Whitener, Philip C., to Boeing Company, The. Method of forming composite wound structure. 4,278,485, Cl. 156-173.000.

Hamrick, Glen F.: *See*—
Poteet, William C.; Terry, Claude E.; Hamrick, Glen F.; and Walls, Francis G., 4,278,482, Cl. 156-78.000.

Haney, Donald J.; and Gaudette, Andrew J., to Cotton Machinery Company, Inc. Apparatus for making modules. 4,278,016, Cl. 100-224.000.

Hanotier, Jacques D. V., to Labofina S.A. Process for the preparation of terephthalic acid. 4,278,810, Cl. 562-412.000.

Hanson, Donald L., to Remo Inc. Pedal adjustable drum. 4,278,003, Cl. 84-411.00A.

Hansson, Bengt L.: *See*—
Egnell, Rolf A.; and Hansson, Bengt L., 4,277,942, Cl. 60-517.000.

Hansson, Gote I. Sinkerdrill. 4,278,136, Cl. 175-93.000.

Hanstein, Friedrich: *See*—
Moench, Theodor P.; and Hanstein, Friedrich, 4,278,723, Cl. 428-192.000.

Hanyu, Susumu; and Koide, Akio, to Janome Sewing Machine Industry Co. Detachable presser foot. 4,278,039, Cl. 112-240.000.

Harada, Hiroshi: *See*—
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Harigaya, Isao: *See*—
Ito, Fumio; Harigaya, Isao; Taguchi, Tetsuya; Tamura, Shuichi; Hirohata, Michio; and Matsuda, Mutsuhide, 4,278,336, Cl. 354-51.000.

Harner, Kermit I.; and Patrick, John P., to United Technologies Corporation. Integral rocket-ramjet closed loop fuel control system. 4,277,940, Cl. 60-243.000.

Harnisch, Horst, to Bayer Aktiengesellschaft. Process for the preparation of pyrene compounds. 4,278,795, Cl. 544-219.000.

Harnischfeger Corporation: *See*—
Myers, Robert D., 4,278,863, Cl. 219-73.100.

Harper, Jon J.: *See*—
Zeitlin, Martin A.; and Harper, Jon J., 4,278,503, Cl. 203-28.000.

Harper, Robert, to United States of America, Navy. Diamond supported helix assembly and method. 4,278,914, Cl. 315-3.500.

Harris, S. Richard; and Bonci, Darlene K., to New England Nuclear Corporation. Methods and kits for double antibody immunoassay providing a colored pellet for easy visualization. 4,278,653, Cl. 424-1.000.

Harrod, Michael K.: *See*—
Mueller, Edward E.; Harrod, Michael K.; and Hagemeister, Frederick C., 4,278,383, Cl. 414-412.000.

Harsco Corporation: *See*—
Clark, John A., Jr., 4,278,069, Cl. 126-366.000.

Harstick, Christian S.: *See*—
Zaweski, Edward F.; and Harstick, Christian S., 4,278,555, Cl. 252-52.00A.

Hart, Dale H.; and Volkmann, Josef F., to Hi Shear Corporation. Safety bolt. 4,278,120, Cl. 411-190.000.

Hartley, David; and Oxford, Alexander W., to Allen & Hanburys Limited. Pharmacologically active compounds. 4,278,673, Cl. 424-249.000.

Hartman, Rickey E.: *See*—
Klopach, Robert T.; and Hartman, Rickey E., 4,278,933, Cl. 324-58.00R.

Hartwell, Charles A. Stabilizer. 4,277,869, Cl. 29-149.50R.

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Hastings, John W.; and Tu, Shiao-Chun, to President and Fellows of Harvard College. Enzyme assay and kit therefor. 4,278,761, Cl. 435-8.000.

Hatfield, James R.; Moseman, Merlin H.; Graham, James R.; and Hirt, Thomas J., to InterNorth, Inc. Removal of residual catalyst from polyolefin polymers. 4,278,788, Cl. 528-494.000.

Hathaway, John C.; and Poppe, Lawrence J., to United States of America, Interior. Sample mount for X-ray diffraction. 4,278,883, Cl. 250-277.0CH.

Haugsjaa, Paul O.: *See*—
Regan, Robert J.; and Haugsjaa, Paul O., 4,278,916, Cl. 315-92.000.

Hauni-Werke Korber & Co. KG.: *See*—
Bardenhagen, Dietrich; Raschka, Wolfgang; Glosmann, Josef; and Tolasch, Gerhard, 4,278,385, Cl. 414-419.000.

Hausermann Abrading & Process Co.: *See*—
Hausermann, Marten C.; and Mues, Melvin V., 4,277,915, Cl. 51-157.000.

Hausermann, Marten C.; and Mues, Melvin V., to Hausermann Abrading & Process Co. Apparatus for shaping electrodes. 4,277,915, Cl. 51-157.000.

Hawkes, Ivor. Vibratory wire strain gage. 4,277,973, Cl. 73-862.410.

Hawkins, Ronald G., to Aluminum Company of America. Damping spacer with hub interlock. 4,278,833, Cl. 174-42.000.

Hayashi, Masaharu, to Aisin Seiki Kabushiki Kaisha. Viscous fluid coupling. 4,278,160, Cl. 192-82.00T.

Hayashi, Masaki; Shimoji, Katsuichi; and Arai, Yoshinobu, to Ono Pharmaceutical Co. Prostaglandin analogues. 4,278,688, Cl. 424-305.000.

Haynes, George R., to Shell Oil Company. Inhibition of biosynthesis of triglycerides by certain N-β-phenethyl-N-thienylalkylamines. 4,278,687, Cl. 424-275.000.

Healy, Antoinette M., executrix: *See*—
Frichette, Ross S.; Grambo, Ronald E.; Biggs, Robert W.; and Healy, Thomas A., deceased, 4,278,162, Cl. 192-107.00C.

Healy, Thomas A., deceased: *See*—
Frichette, Ross S.; Grambo, Ronald E.; Biggs, Robert W.; and Healy, Thomas A., deceased, 4,278,162, Cl. 192-107.00C.

Heaps, John F.; and Gardner, Donald M., to Monsanto Company. Allyl alcohol polymers. 4,278,782, Cl. 526-326.000.

Heath, Robert B., to Rainsfords Metal Products Pty. Ltd. Seat belt load indicator. 4,278,043, Cl. 116-28.00R.

Heath, Robert H.: *See*—
Loveless, W. L.; Trott, Richard J.; Heath, Robert H.; and Glick, William L., 4,278,366, Cl. 406-88.000.

Hecker, Klaus J.: *See*—
Alpers, Frederick C.; and Hecker, Klaus J., 4,278,976, Cl. 343-6.50R.

Heeb, Waldemar: *See*—
Lafortune, Ray; and Heeb, Waldemar, 4,278,093, Cl. 128-419.00P.

Heerdt, Ruth: *See*—
Hubner, Manfred; Kuhnle, Hans; Witte, Ernst-Christian; Heerdt, Ruth; Weyer, Rudi; and Hitzel, Volker, 4,278,680, Cl. 424-266.000.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Conditioner for flotation of oxidized coal. 4,278,533, Cl. 209-166.000.

Hehl, Karl. Injection unit with adjustable plastification cylinder. 4,278,354, Cl. 366-78.000.

Heierli, Werner, to Heliotherm AG. Process and device for the recuperation of heat from selected ranges of the solar spectrum. 4,278,075, Cl. 126-445.000.

Heilen, Gerd: *See*—
Rentzea, Costin; Sauter, Hubert; Ammermann, Eberhard; Heilen, Gerd; and Jung, Johann, 4,278,800, Cl. 548-262.000.

Heisner, Marvin M., to Fansteel Inc. Adjustable boring bar mechanism. 4,278,372, Cl. 408-183.000.

Heliotherm AG: *See*—
Heierli, Werner, 4,278,075, Cl. 126-445.000.

Helletsberger, Harald; Aichhorn, Anton; and Bogusch, Erich, to Tyrolit-Schleifmittelwerke Swarovski K.G. Method for improving the quality of abrasive grains. 4,278,449, Cl. 51-309.000.

Hellwig, Oskar A., to Beatrice Foods Co. Key loop. 4,277,963, Cl. 70-456.00B.

Hemsher, Frank J., to Control Technology, Inc. Visual signaling system. 4,278,966, Cl. 340-366.00R.

Henkel KGaA: *See*—
Stober, Reinhard; and Wirthwein, Rolf, 4,278,615, Cl. 260-502.00R.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Christophliemk, Peter; and Wust, Willi, 4,278,649, Cl. 423-329.000.

Henley, Vernon F. F.: *See*—
Creffield, Geoffrey K.; Wickens, Anthony J.; Dowd, Anthony C. H.; and Henley, Vernon F. F., 4,278,737, Cl. 428-469.000.

Henry, James L., to Bell Telephone Laboratories, Incorporated. Electromagnetic arrangement for measuring electrical current. 4,278,939, Cl. 324-117.00R.

Hensley, Albert L., Jr.; Quick, Leonard M.; and Hopkins, P. Donald, to Standard Oil Company (Indiana). Hydrotreating process. 4,278,566, Cl. 252-465.000.

Herbst, Darrel E.: *See*—
Cassanelli, Robert R.; Wauters, Ronald P.; Cole, Richard A.; Evans, David N.; and Herbst, Darrel E., 4,278,692, Cl. 426-96.000.

Hestad, Alfred M., to Anaconda-Ericsson Inc. Two-way amplifier arrangement. 4,278,843, Cl. 179-18.0BC.

Hewlett-Packard Company: *See*—
Biran, Joseph, 4,278,707, Cl. 427-96.000.
Cross, Peter S.; and Shreve, William R., 4,278,492, Cl. 156-627.000.

Heymer, Gero: *See*—
Jodden, Klaus; Stephan, Hans-Werner; and Heymer, Gero, 4,278,647, Cl. 423-317.000.

Heymes, Rene: *See*—
Durckheimer, Walter; Bormann, Dieter; Ehlers, Eberhard; Schrinner, Elmar; and Heymes, Rene, 4,278,793, Cl. 544-27.000.

Heyser, Richard C., to California Institute of Technology. Method and apparatus for delay analysis of energy transmitted through a medium. 4,279,019, Cl. 364-569.000.

Hi Shear Corporation: *See*—
Hart, Dale H.; and Volkmann, Josef F., 4,278,120, Cl. 411-190.000.

Hibbs, Joseph E.; Chalmers, Gerald W.; Durrell, Robert L.; and Smith, Walter C., to United States of America, Navy. Rocket motor igniter, arming firing device. 4,278,026, Cl. 102-254.000.

Higashigawa, Keizo; and Shinoda, Kazuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Acceleration pump for a carburetor. 4,278,618, Cl. 261-34.00A.

Hiland, Larry K.: *See*—
Madison, James B.; and Hiland, Larry K., 4,278,667, Cl. 424-232.000.
Madison, James B.; and Hiland, Larry K., 4,278,679, Cl. 424-263.000.

Hill, Bernhard; Schmidt, Klaus P.; and Graf, Gerhard, to U.S. Philips Corporation. Optical printer. 4,278,981, Cl. 346-108.000.

Hiller, Heinrich; Eilingsfeld, Heinz; Reinicke, Helmut; and Traub, Fritz, to BASF Aktiengesellschaft. Preparation of 1-amino-2-phenoxy-4-hydroxyanthraquinone. 4,278,606, Cl. 260-380.000.

Hillyard Enterprises, Inc.: *See*—
Carpenter, Dale, 4,278,578, Cl. 260-27.00R.

Hilt, Merlyn R., to Hilt Tire Feedbunk, Inc. Apparatus for inverting tires. 4,278,413, Cl. 425-383.000.

Hilt Tire Feedbunk, Inc.: *See*—
Hilt, Merlyn R., 4,278,413, Cl. 425-383.000.

Himmler, Guenther: *See*—
Mueller, Richard; and Himmler, Guenther, 4,277,976, Cl. 73-457.000.

Hingorani, Narain G., to Electric Power Research Institute. Method and means for cleaning the gas insulated environment of an electrical apparatus. 4,278,832, Cl. 174-14.00R.

Hino, Izumi: *See*—
Fujita, Makoto; Omiya, Shoji; and Hino, Izumi, 4,278,258, Cl. 369-36.000.

Hinshaw, Gerald C.; and Condit, Paul B., to Eastman Kodak Company. Positive-working immobile intramolecular nucleophilic displacement compounds and photographic elements containing same. 4,278,598, Cl. 260-157.000.

Hiot, Guy: *See*—
Cassonnet, Jean-Claude M.; Hiot, Guy; and Cohen, Violette, 4,279,014, Cl. 364-200.000.

Hiraga, Ryozo: *See*—
Kato, Yuzo; Ogino, Yasuo; Hiraga, Ryozo; Yoshinari, Hideki; Tozuka, Masao; Kano, Ichiro; and Suzuki, Akiyoshi, 4,278,893, Cl. 250-548.000.

Hiramatsu, Yasuzo: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,278,672, Cl. 424-248.400.

Hirata, Noritsugu: *See*—
Toyama, Masamichi; Hirata, Noritsugu; Iwama, Hideto; Okajima, Hidekazu; and Nishimura, Akimasa, 4,278,340, Cl. 354-195.000.

Hirbod, Farrokh. Ceramic kiln support apparatus. 4,278,425, Cl. 432-259.000.

Hirohata, Michio: *See*—
Ito, Fumio; Harigaya, Isao; Taguchi, Tetsuya; Tamura, Shuichi; Hirohata, Michio; and Matsuda, Mutsuhide, 4,278,336, Cl. 354-51.000.

Hirose, Tomiyuki, to Tomy Kogyo Co., Inc. Game having a spirally traversing channel. 4,278,253, Cl. 273-121.00R.

Hirt, Thomas J.: *See*—
Hatfield, James R.; Moseman, Merlin H.; Graham, James R.; and Hirt, Thomas J., 4,278,788, Cl. 528-494.000.

Hisaki, Masakatu: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,278,672, Cl. 424-248.400.

Hisamoto, Iwao; Enjo, Naonori; Maeda, Chiaki; Esaka, Takasige; Omure, Yukio; Iida, Toshihiko; and Aomi, Hideki, to Daikin Kogyo Co., Ltd. Fluorine-containing betaine compounds, and production and use thereof. 4,278,552, Cl. 252-3.000.

Hitachi Chemical Co., Ltd.: *See*—
Nishikawa, Akio; Suzuki, Hiroshi; and Kohkame, Hisashi, 4,278,780, Cl. 525-488.000.

Hitachi Denshi Kabushiki Kaisha: *See*—
Fujisaki, Hitoshi, 4,278,954, Cl. 332-9.00T.

Hitachi Koki Company, Limited: *See*—
Nakano, Hiroshige; Katagiri, Shigenobu; and Nishino, Shinichi, 4,278,021, Cl. 101-93.290.

Hitachi, Ltd.: *See*—
Imaizumi, Ichiro; Kimura, Masatoshi; and Uehara, Keijiro, 4,278,987, Cl. 357-48.000.
Kawamura, Hiromitsu; Nakajima, Tokuyoshi; Shibuya, Yoshimichi; and Yokokura, Hisao, 4,278,326, Cl. 350-343.000.
Mukoh, Akio; Abe, Hidetoshi; Kawakami, Hideaki; Nagae, Yoshiharu; Morishita, Hirosada; and Kaneko, Eiji, 4,278,328, Cl. 350-349.000.
Nakazawa, Tetsuo; Sakai, Junji; Morimoto, Syogo; Tanigawa, Takatoshi; Takahashi, Ryoji; and Okazaki, Seiji, 4,278,581, Cl. 260-29.60M.
Nanaumi, Ken; Shoji, Fusaji; Kohkame, Hisashi; and Era, Susumu, 4,278,786, Cl. 528-179.000.
Nishikawa, Akio; Suzuki, Hiroshi; and Kohkame, Hisashi, 4,278,780, Cl. 525-488.000.
Nishimiya, Torazo; and Okumura, Masamitsu, 4,278,959, Cl. 335-262.000.
Ogura, Toshio, 4,278,915, Cl. 315-39.710.
Shida, Toichi, 4,278,051, Cl. 122-406.00A.
Yajima, Hiroshi; Komoda, Norihisa; and Horiuchi, Susumu, 4,278,104, Cl. 137-118.000.
Yamashita, Yoshiaki; Kambara, Hiroyuki; Kambayashi, Hiroaki; and Okada, Yasuyuki, 4,279,004, Cl. 360-48.000.

Hitachi Metals, Ltd.: *See*—
Nakazawa, Tetsuo; Sakai, Junji; Morimoto, Syogo; Tanigawa, Takatoshi; Takahashi, Ryoji; and Okazaki, Seiji, 4,278,581, Cl. 260-29.60M.

Hitzel, Volker: *See*—
Hubner, Manfred; Kuhnle, Hans; Witte, Ernst-Christian; Heerdt, Ruth; Weyer, Rudi; and Hitzel, Volker, 4,278,680, Cl. 424-266.000.

Hock, Donal D.: *See*—
Baynes, William R.; and Hock, Donal D., 4,278,250, Cl. 272-113.000.

Hodgins, Bruce J.; Saltz, Ivan K.; and Ginsberg, Guenter, to Coulter Electronics, Inc. Variable stop syringe. 4,278,086, Cl. 128-224.000.

Hodgson, Thomas D.; and Jordan, Tony W. J., to United Kingdom Atomic Energy Authority. Apparatus and method for transporting items. 4,278,531, Cl. 209-11.000.

Hoechst Aktiengesellschaft: *See*—
Durckheimer, Walter; Bormann, Dieter; Ehlers, Eberhard; Schrinner, Elmar; and Heymes, Rene, 4,278,793, Cl. 544-27.000.
Jodden, Klaus; Stephan, Hans-Werner; and Heymer, Gero, 4,278,647, Cl. 423-317.000.
Kleber, Rolf; and Jaeckel, Lothar, 4,278,773, Cl. 525-6.000.
Niemann, Elfriede; Stagg, Brian H.; and Cowan, Stuart I., 4,278,652, Cl. 424-1.000.
Salbeck, Gerhard; Schonowsky, Hubert; Horlein, Gerhard; Langeluddeke, Peter; and Kocher, Helmut, 4,278,461, Cl. 71-87.000.

Hoer, Ralph A.: *See*—
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Hoesch Werke Aktiengesellschaft: *See*—
Knieps, Horst H., 4,278,014, Cl. 100-26.000.

Hofeldt, Robert H.: *See*—
Billings, Charles A.; and Hofeldt, Robert H., 4,278,718, Cl. 428-64.000.

Hofer, Helmut: *See*—
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Hoff, Stephen J., to Hoffco, Inc. Combined flywheel and clutch driver, and control and warning device. 4,277,936, Cl. 56-11.700.

Hoffco, Inc.: *See*—
Hoff, Stephen J., 4,277,936, Cl. 56-11.700.
Hoffman, Jack D.: *See*—
Smith, Donald C.; and Hoffman, Jack D., 4,278,558, Cl. 252-186.000.
Hoffmann-La Roche Inc.: *See*—
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; and Kierstead, Richard W., 4,278,608, Cl. 260-401.000.
Liu, Chao-Min; Prosser, Barbara; and Westley, John, 4,278,663, Cl. 424-119.000.
Wick, Alexander E., 4,278,798, Cl. 546-298.000.
Hofmann, Otto; and Nagler, Georg, to Tele-Alarm, Nachrichtentechntehe Gerate GmbH. Switching arrangement for recording a value-balance. 4,278,879, Cl. 235-380.000.
Homestead, Peter W., to Scott Paper Company. Folding seating piece. 4,278,287, Cl. 297-59.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Inoue, Hidehiko; Nishikawa, Masao; and Anno, Nobuo, 4,278,266, Cl. 280-276.000.
Izumi, Seiji; and Ookubo, Kiyokazu, 4,277,983, Cl. 74-477.000.
Suzuki, Hitoshi; and Omagari, Masaharu, 4,278,297, Cl. 301-6.00D.
Honda, Kiyoshi; Kuriyama, Kazuya; Murakami, Shigeru; Sugawara, Ryozo; and Nakamura, Chiaki, to Dainippon Ink & Chemicals, Inc. Embossed interior finishing materials having excellent cigarette mark resistance. 4,278,728, Cl. 428-313.000.
Honda, Yasuo: *See*—
Tadokoro, Tomoo; and Honda, Yasuo, 4,278,639, Cl. 422-171.000.
Honeywell Inc.: *See*—
Singh, Gurnam, 4,278,195, Cl. 228-123.000.
Van Sloun, Peter H., 4,279,027, Cl. 367-125.000.
Honeywell Information Systems Italia S.p.A.: *See*—
Brunelli, Romeo; and Casamatta, Angelo, 4,279,033, Cl. 370-29.000.
Honna, Takaji: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,278,672, Cl. 424-248.400.
Hooker Chemicals & Plastics Corp.: *See*—
Rosenfeld, Jerold C., 4,278,785, Cl. 528-176.000.
Hooper, David C.; Johnson, George A.; and Peter, Donald, to Lever Brothers Company. Deodorant composition. 4,278,658, Cl. 424-65.000.
Hopkins Agricultural Chemical Co.: *See*—
McCormick, Charles L., 4,278,790, Cl. 536-84.000.
Hopkins, P. Donald: *See*—
Hensley, Albert L., Jr.; Quick, Leonard M.; and Hopkins, P. Donald, 4,278,566, Cl. 252-465.000.
Hoppe, Joachim; Haghiri-Tehrani, Yahya; and Gauch, Wolfgang, to G.A.O. Gesellschaft fur Automation und Organisation mbH. Multilayer edge sealed record carrier. 4,278,722, Cl. 428-192.000.
Hopper, Thomas P., to Sunworks, Inc. Solar collector of a liquid heat exchange type. 4,278,076, Cl. 126-450.000.
Hori, Ryoichi: *See*—
Nakamura, Hidehisa; Hori, Ryoichi; Isomoto, Emiko; and Murakami, Yoichi, 4,278,575, Cl. 260-22.0CB.
Hori, Ryuzo: *See*—
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Horii, Kazuo: *See*—
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,278,699, Cl. 426-624.000.
Horikiri, Yoshito: *See*—
Mizutani, Hitoshi; Nakajima, Zenji; Horikiri, Yoshito; Harada, Hiroshi; and Yokotsuji, Yasushi, 4,278,262, Cl. 277-212.0FB.
Horiuchi, Susumu: *See*—
Yajima, Hiroshi; Komoda, Norihisa; and Horiuchi, Susumu, 4,278,104, Cl. 137-118.000.
Horizons Research Incorporated: *See*—
Lewis, James M.; and McInerney, Eugene F., 4,278,753, Cl. 430-283.000.
Horlein, Gerhard: *See*—
Salbeck, Gerhard; Schonowsky, Hubert; Horlein, Gerhard; Langeluddeke, Peter; and Kocher, Helmut, 4,278,461, Cl. 71-87.000.
Hormanns, Rolf, to Schlegel GmbH. Method of engaging a self-clamping sealing strip on a retaining flange. 4,278,487, Cl. 156-305.000.
Horn, Stuart B.; Asher, Mark S.; and Dunmire, Howard L., to United States of America, Army. Cryogenic cooler with annular regenerator and clearance seals. 4,277,948, Cl. 62-6.000.
Horowitz, Charles, to Sloan Valve Company. Electrical connector mounting bracket. 4,278,226, Cl. 248-314.000.
Horsley, John K., to Molins Limited. Web splicing apparatus. 4,278,489, Cl. 156-361.000.
Hosomizu, Tohru: *See*—
Ohno, Kenichi; Hosomizu, Tohru; and Nawata, Kazumasa, 4,278,897, Cl. 307-455.000.
Hostetter, Morgan D. Proportioning apparatus. 4,278,132, Cl. 169-13.000.
Hou, Kenneth C.; and Kilty, Michael F., to AMF Incorporated. Wound cartridge filters. 4,278,551, Cl. 210-767.000.
Houghton, Russell J., to International Business Machines Corporation. Sense latch. 4,279,023, Cl. 365-174.000.
Howard, Curtis E.: *See*—
Satter, Abdus; Widmyer, Richard H.; Shum, Yick M.; and Howard, Curtis E., 4,278,128, Cl. 166-250.000.
Howard, Douglas C.: *See*—
Price, Ernest H.; and Howard, Douglas C., 4,278,110, Cl. 137-805.000.
Howlett, Joseph A.: *See*—
Chien, James C. W.; Evnochides, Steven K.; and Howlett, Joseph A., 4,278,510, Cl. 204-14.00R.
Howmedica, Inc.: *See*—
Borzone, Rocco R., 4,278,091, Cl. 128-334.00C.
Huck, Charles M.; Studer, John E.; and Sauer, Philip H., 4,278,089, Cl. 128-278.000.
Hsien, Shou-Chung. Gyroscope-monocycle. 4,277,912, Cl. 46-269.000.
Hsu, Sheng T., to RCA Corporation. Method for forming an improved gate member utilizing special masking and oxidation to eliminate projecting points on silicon islands. 4,277,884, Cl. 29-571.000.
Huang, Gin G.: *See*—
Haskell, Theodore H.; Hutt, Marland P., Jr.; Nicolaides, Ernest D.; Woo, Peter W. K.; and Huang, Gin G., 4,278,681, Cl. 424-266.000.
Huber, Doyle W.; Smith, Richard H.; and Strong, Robert L., to Boeing Company, The. Machine and method for single pass taper milling. 4,277,868, Cl. 29-33.00Q.
Hubner, Manfred; Kuhnle, Hans; Witte, Ernst-Christian; Heerdt, Ruth; Weyer, Rudi; and Hitzel, Volker, to Boehringer Mannheim GmbH. Hypoglycaemically and hypolipidaemically active derivatives of phenylacetic acid. 4,278,680, Cl. 424-266.000.
Hubsch, Henry: *See*—
Ahlborn, Gunther; Fiedler, Eberhard; Hubsch, Henry; and Kramer, Rolf, 4,278,030, Cl. 105-208.100.
Huck, Charles M.; Studer, John E.; and Sauer, Philip H., to Howmedica, Inc. Wound drainage device. 4,278,089, Cl. 128-278.000.
Hudgin, Richard H., to Princeton Polymer. Thermal barrier. 4,278,721, Cl. 428-122.000.
Huebl, Julius: *See*—
Eichinger, Hans; and Huebl, Julius, 4,278,028, Cl. 105-136.000.
Eichinger, Johann; and Huebl, Julius, 4,278,027, Cl. 105-131.000.
Hug, Niklaus, to Rommag P. Worwag & Co. Vacuum cleaner. 4,278,456, Cl. 55-429.000.
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Anderson, Edward A.; Rawls, Rose M.; and Tull, James A., 4,278,479, Cl. 148-23.000.
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Freund, William P.; and Hulvey, Stephen R., 4,278,242, Cl. 266-263.000.
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Griffiths, Trevor J.; Sharpe, Raymond; and Hunt, Peter, 4,278,928, Cl. 322-29.000.
Hunt, Ronald E.: *See*—
Habich, Adolph B.; and Hunt, Ronald E., 4,278,356, Cl. 400-59.000.
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Hunter, Robert K., Jr.: *See*—
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Creed, Gerald J.; Dudis, Frank; Edwards, William J.; and Hurler, Herbert T., 4,278,037, Cl. 112-168.000.
Hurst, David R.; and Elston, Lewis W., to Georgia Tech Research Institute. Method for the recovery of clean pyrolysis off-gas and a rotary recycling means therefor. 4,278,450, Cl. 55-80.000.
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Iida, Toshihiko: *See*—
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White, Raymond R., 4,278,316, Cl. 339-258.00R.
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Goto, Satoshi; Takei, Yoshiaki; Imaho, Ichiro; and Nomori, Hiroyuki, 4,278,746, Cl. 430-59.000.
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Imperial Chemical Industries Limited: *See*—
Byrd, Geoffrey C.; and Stanier, Colin, 4,278,523, Cl. 204-252.000.
Roesler, Frank C., deceased, 4,278,546, Cl. 210-626.000.
Indian Head Inc.: *See*—
Rady, Robert R., 4,277,887, Cl. 30-92.000.
Ingenjorsfirman N. A. Sandberg Industrikorstruktioner AB: *See*—
Sandberg, Nils A., 4,278,365, Cl. 406-30.000.
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Taniyama, Susumu; Shimaoka, Goro; and Inoue, Shoichi, 4,278,783, Cl. 528-23.000.
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Cholet, Jacques; Damotte, Bernard; and Laurent, Jean, 4,278,982, Cl. 346-108.000.
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Petrov, Nikolov Y.; Pavlova, Maria M.; and Bojkov, Ognyan D., 4,278,641, Cl. 423-49.000.
Interface, Inc.: *See*—
Caris, Richard F., 4,278,139, Cl. 177-154.000.
International Business Machines Corporation: *See*—
Andrew, Jerry C.; and Tanner, Roberta R., 4,278,342, Cl. 355-3.0CH.
Barclay, Donald J.; and Vigar, James M. L., 4,278,512, Cl. 204-41.000.
Houghton, Russell J., 4,279,023, Cl. 365-174.000.
Hughes, Michael A.; Johnson, Jeremy S. M.; and Winn, Graham C. E., 4,278,973, Cl. 340-721.000.
Leininger, Joel C.; Bliss, Floyd R.; and Fairchild, Peter T., 4,279,016, Cl. 364-200.000.
Loy, Michael M.; and Sorokin, Peter P., 4,278,902, Cl. 307-426.000.
Matla, Arno; and Matthaei, Horst D., 4,278,357, Cl. 400-144.200.
Meier, Johann H., 4,278,019, Cl. 101-93.040.
Oaten, Albert W., 4,278,020, Cl. 101-93.050.
Petvai, Steve I., 4,278,493, Cl. 156-643.000.
Piston, Albert O.; and Sherk, Thomas A., 4,278,909, Cl. 313-217.000.
Tan, Swie-In, 4,278,867, Cl. 219-121.0LD.
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Habich, Adolph B.; and Hunt, Ronald E., 4,278,356, Cl. 400-59.000.
International Flavors & Fragrances Inc.: *See*—
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,278,098, Cl. 131-276.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,278,569, Cl. 252-522.00R.
International Minerals & Chemical Corporation: *See*—
Allen, Hanceford L.; and Berry, William W., 4,278,640, Cl. 423-10.000.
InterNorth, Inc.: *See*—
Hatfield, James R.; Moseman, Merlin H.; Graham, James R.; and Hirt, Thomas J., 4,278,788, Cl. 528-494.000.
Iowa State University Research Foundation, Inc.: *See*—
Buchele, Wesley F., 4,278,036, Cl. 111-52.000.
Ipsen Industries International Gesellschaft mit beschrankter Haftung: *See*—
Limque, Ferdinand; and Bertrand, Hans, 4,278,421, Cl. 432-152.000.
Irish, Ellwood: *See*—
Rebentisch, Hugo E.; and Irish, Ellwood, 4,277,923, Cl. 52-126.000.
Irvin, Howard B., to Phillips Petroleum Company. Polymer solution purification. 4,278,506, Cl. 203-68.000.
Ishida, Kohji, to Pioneer Electronic Corporation. Chopper type switching circuit. 4,278,944, Cl. 329-103.000.
Ishidoshiro, Hiroshi: *See*—
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Ishiyama, Nobuo: *See*—
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Ishizawa, Shizuo: *See*—
Nakamura, Ken; Sugihara, Kunihiko; and Ishizawa, Shizuo, 4,278,063, Cl. 123-568.000.
Ishizuka, Hiroshi; and Suzuki, Kazuo. Diamond abrasive grits. 4,278,448, Cl. 51-295.000.
Isobe, Toshiaki; and Yokoyama, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Feedback type air fuel ratio controlling system. 4,278,060, Cl. 123-440.000.
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Nakamura, Hidehisa; Hori, Ryoichi; Isomoto, Emiko; and Murakami, Yoichi, 4,278,575, Cl. 260-22.0CB.
Ito, Fumio; Harigaya, Isao; Taguchi, Tetsuya; Tamura, Shuichi; Hirohata, Michio; and Matsuda, Mutsuhide, to Canon Kabushiki Kaisha. Operation detecting device for camera. 4,278,336, Cl. 354-51.000.
Ito, Koichi: *See*—
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Itoh, Masamitsu: *See*—
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ITT Industries, Inc.: *See*—
de Koning, Martinus, 4,277,877, Cl. 29-402.080.
Miskin, Leslie, 4,278,998, Cl. 358-198.000.
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Iwanami, Eiichi, to Kabushiki Kaisha Daini Seikosha. Electronic circuit for timepiece. 4,278,899, Cl. 307-304.000.
Iwasaki, Hirotsugu: *See*—
Matsuda, Minoru; Iwasaki, Hirotsugu; Tamai, Yasukatsu; Iino, Masashi; and Fukutome, Hiroshi, 4,278,442, Cl. 44-1.00R.
Iwasaki, Masami: *See*—
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Izumi, Seiji; and Ookubo, Kiyokazu, to Honda Giken Kogyo Kabushiki Kaisha. Interlocking device for shift rod in power transmission. 4,277,983, Cl. 74-477.000.
Izumi, Tokio: *See*—
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J. I. Case Company: *See*—
Flippin, James S., 4,277,898, Cl. 37-86.000.
Johnson, Stephen D., 4,278,394, Cl. 414-694.000.
Parquet, Donald J., 4,278,011, Cl. 91-445.000.
Wernimont, Theodore A., 4,278,857, Cl. 200-83.00R.
J. M. Schneider Inc.: *See*—
Dingethal, Frank H.; and Bartosek, Edward, 4,278,693, Cl. 426-129.000.
Jackson, Archie A. Glass carrying rack. 4,278,175, Cl. 211-41.000.
Jackson, Lynden A., to Post Office, The. Submarine communication cable including optical fibres within an electrically conductive tube. 4,278,835, Cl. 174-70.00R.
Jacob, Gernot; and Pelloni, Luciano, to BBC Brown Boveri & Company Limited. Apparatus for treating contaminated water. 4,278,522, Cl. 204-228.000.
Jacobsen, Evan. Smoking device. 4,278,099, Cl. 131-178.000.
Jacobson, Wayne M., to Cyclonaire Corporation. Feeder apparatus for pneumatic conveying lines. 4,278,367, Cl. 406-109.000.
Jacoby, Charles J.: *See*—
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Jaeckel, Lothar: *See*—
Kleber, Rolf; and Jaeckel, Lothar, 4,278,773, Cl. 525-6.000.
Jakabhazy, Stephen Z.; and Patel, Laxmidas R., to Abcor, Inc. Grafted polymers and method of preparing and using same. 4,278,777, Cl. 525-276.000.
Jakobs, Ewald; and Lang, Gernot, to Rochling-Burbach Weiterverarbeitung GmbH. Device for rough turning and shaft turning. 4,278,369, Cl. 407-113.000.
Jakobson, Karl F. O., to AB Celleco. Method for separation of material mixtures, containing abrasive particles, in a hydrocyclone separator. 4,278,534, Cl. 209-211.000.
Jani, William. Port apparatus for well piping. 4,278,131, Cl. 166-332.000.
Janich, Hans-Jurgen. Slide valve for pipelines. 4,278,236, Cl. 251-159.000.
Janome Sewing Machine Industry Co.: *See*—
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Janssen Pharmaceutica N.V.: *See*—
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Japan Electric Industry Development Assoc.: *See*—
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Jasne, Stanley J.: *See*—
Haas, Howard C.; Jasne, Stanley J.; and Moreau, Robert D., 4,278,803, Cl. 556-419.000.
Jelks, Edward C., to United States of America, Navy. Apparatus and method for submicron pattern generation. 4,278,710, Cl. 427-250.000.
Jenq, Cheng-Yih, to Casella, Anthony J. Method of making printed circuit board by induction heating of the conductive metal particles on a plastic substrate. 4,278,702, Cl. 427-45.100.
Jinguji, Isamu: *See*—
Ihara, Susumu; Kashiuchi, Yoshinobu; and Jinguji, Isamu, 4,278,934, Cl. 324-61.00P.
Jirmanus, Naila S.: *See*—
Bouchard, Andre C.; and Jirmanus, Naila S., 4,278,420, Cl. 431-362.000.
Jodden, Klaus; Stephan, Hans-Werner; and Heymer, Gero, to Hoechst Aktiengesellschaft. Production of phosphorous acid. 4,278,647, Cl. 423-317.000.
Johannes, Gerald E. Slurry type explosive. 4,278,480, Cl. 149-2.000.

Johannesson, Brian J., to NCR Canada Ltd. - NCR Canada Ltee. Printing means. 4,278,018, Cl. 101-93.000.
John, Kamar P.: *See—*
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Johnson, David A.: *See—*
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Johnson, David B. Implement for smoothing particulate material surfaces. 4,278,134, Cl. 172-373.000.
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Johnson, Jeremy S. M.: *See—*
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Johnson, Lawrence N. Pivotal roller mounting system. 4,278,388, Cl. 414-534.000.
Johnson, Ralph E., to Singer Company, The. Combined needle guard and hook beak for a sewing machine hook. 4,278,038, Cl. 112-228.000.
Johnson, Randall J.: *See—*
Starai, Terrence M.; Champlin, John H., Jr.; and Johnson, Randall J., 4,278,957, Cl. 333-202.000.
Johnson, Stephen D., to J. I. Case Company. Releasable boom lock. 4,278,394, Cl. 414-694.000.
Johnston, Edward: *See—*
Clarke, Ronald M.; and Johnston, Edward, 4,278,046, Cl. 118-695.000.
Johnston, Everett A.; and Ryan, Edward W., to United States of America, National Aeronautics and Space Administration. Thrust reverser for a long duct fan engine. 4,278,220, Cl. 244-110.00B.
Jonah, Wilford B.: *See—*
Crocker, Zenas; and Jonah, Wilford B., 4,278,530, Cl. 209-3.000.
Jones, David F., to Bell Telephone Laboratories, Incorporated. Communication system selective call screening arrangement. 4,278,844, Cl. 179-18.00B.
Jones, Donald W.: *See—*
Chari, Madabushi V. K.; Jones, Donald W.; and Laskaris, Evangelos T., 4,278,905, Cl. 310-52.000.
Jones, James W. Tracheal tube. 4,278,081, Cl. 128-207.150.
Joppe, R. Brent; and Postema, Leonard F. Water slide. 4,278,247, Cl. 272-56.50R.
Jordan, Tony W. J.: *See—*
Hodgson, Thomas D.; and Jordan, Tony W. J., 4,278,531, Cl. 209-11.000.
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Rentzea, Costin; Sauter, Hubert; Ammermann, Eberhard; Heilen, Gerd; and Jung, Johann, 4,278,800, Cl. 548-262.000.
Kabushiki Kaisha Daini Seikosha: *See—*
Iwanami, Eiichi, 4,278,899, Cl. 307-304.000.
Kondo, Kenichi; Kuronuma, Ryuichi; and Kaneko, Noboru, 4,278,325, Cl. 350-331.00T.
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Kabushiki Kaisha Seikosha: *See—*
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Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
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KACO GmbH & Co.: *See—*
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Kadija, Igor V., to Olin Corporation. Diaphragms for use in the electrolysis of alkali metal chlorides. 4,278,524, Cl. 204-252.000.
Kaeding, Warren W.: *See—*
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Kaessen, Donald A., to Marley-Wylain Company, The. Liquid level responsive proximity switch. 4,278,858, Cl. 200-84.00B.
Kagami, Akiyasu; and Mimura, Yoshiyuki, to Kasei Optonix, Ltd.; and Japan Electric Industry Development Assoc. Phosphor and low-velocity electron excited fluorescent display device utilizing the same. 4,278,913, Cl. 313-495.000.
Kajimura, Mutsuhiko; and Maeda, Tetsuji, to Sekisui Kaseihin Kogyo Kabushiki Kaisha. Expandable styrene-maleic anhydride copolymer particles and a process for molding the same. 4,278,627, Cl. 264-45.400.
Kajitani, Makoto: *See—*
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Kaken Chemical Co., Ltd.: *See—*
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Kalisz, George T.: *See—*
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Kalnoki-kis, Tibor, to Union Carbide Corporation. Nonaqueous cell. 4,278,741, Cl. 429-48.000.
Kaltenbach & Voight GmbH & Co.: *See—*
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Kamerling, Marc A., to Optical Coating Laboratory, Inc. Contrast enhancement filter and method. 4,278,736, Cl. 428-437.000.
Kametaka, Norio; Marumo, Kuniomi; and Nozawa, Tutomu, to Showa Denka K.K. Process for preparing monoalkylene glycol monoethers. 4,278,820, Cl. 568-678.000.
Kamimura, Kuniaki: *See—*
Toriumi, Shiro; Saijo, Takao; Endo, Hiroshi; Kamimura, Kuniaki; and Saito, Takanori, 4,278,346, Cl. 355-45.000.
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Kanaya, Yoshihiro: *See—*
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Kandatsu, Kiyoshi, to Fuji Electric Co., Ltd. Electromagnetically operated multi-pole circuit breaker. 4,278,958, Cl. 335-16.000.
Kanebo, Ltd.: *See—*
Tezuka, Keizo; Okuyama, Genichiro; Tokunaga, Kazunobu; and Otani, Yasuhisa, 4,278,657, Cl. 424-63.000.
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Kao Soap Co., Ltd.: *See—*
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Kapadia, Jayant K.; and Matty, Thomas C., to Westinghouse Electric Corp. Fail-safe pulse providing apparatus. 4,278,900, Cl. 307-311.000.
Kaplan, Leonard A., to RCA Corporation. Current scaling circuitry. 4,278,946, Cl. 330-288.000.
Kaplan, Steven H., to Raytheon Company. Integrated circuit manufacturing method. 4,277,883, Cl. 29-571.000.
Karn, Helmut: *See—*
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Kashiuchi, Yoshinobu: *See—*
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Katagiri, Shigenobu: *See—*
Nakano, Hiroshige; Katagiri, Shigenobu; and Nishino, Shinichi, 4,278,021, Cl. 101-93.290.
Katakabe, Noboru: *See—*
Sasaki, Toshiharu; Katakabe, Noboru; and Yokoyama, Yoshihiro, 4,279,006, Cl. 360-90.000.
Kato, Masaaki: *See—*
Watanabe, Hiroyuki; Miyoshi, Eiji; Kojima, Haruo; Yoshida, Takeshi; Kato, Masaaki; and Miyazaki, Shizuo, 4,278,865, Cl. 219-99.000.
Kato, Toshio, to Tanaka Business Machines Co. Ltd. Passing person counting apparatus. 4,278,878, Cl. 235-92.0PK.
Kato, Yuzo; Ogino, Yasuo; Hiraga, Ryozo; Yoshinari, Hideki; Tozuka, Masao; Kano, Ichiro; and Suzuki, Akiyoshi, to Canon Kabushiki Kaisha. Alignment apparatus. 4,278,893, Cl. 250-548.000.
Katsunuma, Nobuhiko. Glucocorticoid sparing factor and process for the production of the same. 4,278,593, Cl. 260-112.00R.
Katz, Lewis E.: *See—*
Agraz-Guerena, Jorge; Katz, Lewis E.; and Morris, Bernard L., 4,278,705, Cl. 427-93.000.

Kawakami, Hideaki: *See*—
Mukoh, Akio; Abe, Hidetoshi; Kawakami, Hideaki; Nagae, Yoshiharu; Morishita, Hirosada; and Kaneko, Eiji, 4,278,328, Cl. 350-349.000.

Kawamura, Hiromitsu; Nakajima, Tokuyoshi; Shibuya, Yoshimichi; and Yokokura, Hisao, to Hitachi, Ltd. Liquid crystal display element. 4,278,326, Cl. 350-343.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Watanabe, Junichi; Aoyama, Takahiko; and Gotoh, Norio, 4,278,147, Cl. 181-256.000.

Kawasaki Steel Corporation: *See*—
Aso, Kazuo; Nishioka, Takesaburo; Yamamoto, Takemi; Miyai, Naomichi; and Matsuno, Jun-ichi, 4,278,124, Cl. 164-125.000.

Kawazu, Ryuji: *See*—
Yamashita, Yoshio; Kunishi, Mitsumasa; and Kawazu, Ryuji, 4,278,754, Cl. 430-323.000.

Kay, Peter D.: *See*—
Medding, Reuben; and Kay, Peter D., 4,278,921, Cl. 318-254.000.

Kaye, Stanton H.: *See*—
Karr, Lawrence J.; and Kaye, Stanton H., 4,277,974, Cl. 73-339.00R.

Kays, Jerry W.: *See*—
Wood, Loren E.; Allen, Jerome D.; Clift, Miner E.; Kays, Jerry W.; and Forsythe, Calvin C., 4,278,181, Cl. 220-89.00A.

Keeffe, William M.; and Brown, David R., to GTE Products Corporation. High pressure arc discharge lamp having concave shaped outer jacket. 4,278,910, Cl. 313-220.000.

Keely, William A.: *See*—
Nevins, Glenn T.; and Keely, William A., 4,278,866, Cl. 219-121.0EC.

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Werner, Paul; and Strowik, Willibald, 4,278,290, Cl. 297-362.000.

Kellar, John D.: *See*—
Pereman, Gordon F.; and Kellar, John D., 4,278,193, Cl. 225-2.000.

Kellen, Paul F.: *See*—
Ahouse, David R.; Daugherty, Jack D.; Glickler, Sheldon L.; Kellen, Paul F.; Sutton, George W.; Korff, David; and Yoder, Marvel J., 4,278,950, Cl. 331-94.50G.

Keller, Bruce E., to Boeing Company, The. Support system for extensible bellows. 4,278,352, Cl. 356-358.000.

Kelley, Charles H.; Crane, Jimmie W.; and Ray, Albert D. Disaster activated shut-off valve. 4,278,102, Cl. 137-39.000.

Kelly, Michael J.: *See*—
Rakli, Fridtjov B.; and Kelly, Michael J., 4,278,654, Cl. 424-5.000.

Kelyman, Jacqueline S.: *See*—
Swart, Daniel J.; and Kelyman, Jacqueline S., 4,278,787, Cl. 528-191.000.

Kemlite Corporation: *See*—
Morse, Donald B., 4,278,491, Cl. 156-501.000.

Kempe, Uwe; Dockner, Toni; Frank, Anton; and Karn, Helmut, to BASF Aktiengesellschaft. Preparation of 5-hydroxymethylimidazoles. 4,278,801, Cl. 548-342.000.

Kemper, Yves J., to Vadetec Corporation. Torque transmitting body for traction drive transmissions and normal friction force developing method. 4,277,982, Cl. 74-191.000.

Kempf, Dale F.: *See*—
Baker, Charles W.; Wilson, Robert J.; and Kempf, Dale F., 4,278,338, Cl. 354-83.000.

Kennedy Sky-Lites, Inc.: *See*—
Weisner, Kent A.; and Walls, Lester L., Jr., 4,278,414, Cl. 425-388.000.

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Brixy, Heinz; and Hofer, Helmut, 4,278,828, Cl. 136-232.000.
Filss, Peter, 4,278,645, Cl. 423-210.000.

Kerr Glass Manufacturing Corporation: *See*—
Geiser, Milton L., 4,278,178, Cl. 215-215.000.

Kerr-McGee Refining Corporation: *See*—
Gearhart, Junior A., 4,278,529, Cl. 208-309.000.

Kerst, Herman, to Chemed Corporation. Method for deoxygenation of water. 4,278,635, Cl. 422-14.000.

Kesavan, Krishnamurthy: *See*—
Silvestri, George J., Jr.; and Kesavan, Krishnamurthy, 4,277,943, Cl. 60-646.000.

Kessinger, Orville E., Jr., to Caterpillar Tractor Co. Brake assembly for a vehicle. 4,278,151, Cl. 188-71.300.

Kessler, Harry T., Jr.: *See*—
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Khurges, Evgeny M.: *See*—
Debabov, Vladimir G.; Kozlov, Jury I.; Zhdanova, Nelli I.; Khurges, Evgeny M.; Yankovsky, Nikolai K.; Rozinov, Mikhail N.; Shakulov, Rustem S.; Rebentish, Boris A.; Livshits, Vitaly A.; Gusyatiner, Mikhail M.; Mashko, Sergei V.; Moshentseva, Vera N.; Kozyreva, Ljudmila F.; and Arsatiants, Raisa A., 4,278,765, Cl. 435-172.000.

Kiba, Gunji; and Mizuno, Hiroyuki. Device for mounting the molding of a bonded type windshield. 4,278,286, Cl. 296-93.000.

Kibun Company Limited: *See*—
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,278,699, Cl. 426-624.000.

Kida, Makoto: *See*—
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Kidder, Gerald F.: *See*—
Eigenbrod, Lester K.; Kidder, Gerald F.; and Zeunik, Robert L., 4,277,950, Cl. 62-55.000.

Kierstead, Richard W.: *See*—
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; and Kierstead, Richard W., 4,278,608, Cl. 260-401.000.

Kifferstein, Harry P. Rhythm indicating exercisers. 4,278,248, Cl. 272-68.000.

Kilty, Michael F.: *See*—
Hou, Kenneth C.; and Kilty, Michael F., 4,278,551, Cl. 210-767.000.

Kim, Tai K.: *See*—
MacInnis, Martin B.; and Kim, Tai K., 4,278,642, Cl. 423-54.000.

Kimberlin, Dan R.: *See*—
Cymbal, William D.; and Kimberlin, Dan R., 4,278,154, Cl. 192-4.00A.

Kimberly-Clark Corporation: *See*—
Kopacz, Thomas J.; and Jacoby, Charles J., 4,278,488, Cl. 156-351.000.
Reeves, William G.; and Thomas, Douglas C., 4,278,088, Cl. 128-270.000.

Kime, Wellesley R. Rapid response steam generating apparatus. 4,278,050, Cl. 122-39.000.

Kimura, Masatoshi: *See*—
Imaizumi, Ichiro; Kimura, Masatoshi; and Uehara, Keijiro, 4,278,987, Cl. 357-48.000.

Kimura, Yoshinori; Sunayama, Masuki; and Okamoto, Yoshiki, to Tokyo Shibaura Denki Kabushiki Kaisha. Navigation-monitoring apparatus. 4,278,975, Cl. 343-6.00R.

King, Palmer F. Fluid clutch. 4,278,157, Cl. 192-58.00R.

Kinser, C. Wayne. Simulated log building structure. 4,277,925, Cl. 52-233.000.

Kirk, Donald C., Jr., to Ethyl Products Company. Accumulative pressure pump. 4,278,189, Cl. 222-321.000.

Kishi, Hiroyasu, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Pulsive component detecting apparatus. 4,278,901, Cl. 307-350.000.

Kishimoto, Kazuo: *See*—
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,278,526, Cl. 204-266.000.

Kitamura, Masatsugu; Onoye, Hideo; and Yamazaki, Masami, to Victor Company of Japan, Limited. Method and system for automatically providing flat frequency response to audio signals recorded on magnetic tapes. 4,279,005, Cl. 360-66.000.

Kiuchi, Hiroshi: *See*—
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,278,699, Cl. 426-624.000.

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Kiyonaga, Kazuo, to Union Carbide Corporation. Process for upgrading iron ore pellets. 4,278,462, Cl. 75-5.000.

Klann, Paul A. Pedalboard. 4,278,004, Cl. 84-434.000.

Kleber, Rolf; and Jaeckel, Lothar, to Hoechst Aktiengesellschaft. Dispersible compositions of fluorocarbon resins. 4,278,773, Cl. 525-6.000.

Klein, Edward J. Veterinary medicine facility. 4,278,048, Cl. 119-15.000.

Klein, Helmut: *See*—
Danulat, Hans F.; John, Kamar P.; Klein, Helmut; and Lukatsch, Stephen, 4,278,505, Cl. 203-59.000.

Klein, Jordan N., to Mako Compressors Inc. Gas purification. 4,278,453, Cl. 55-275.000.

Klepic, John G., III: *See*—
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Klockner-Humboldt-Deutz AG: *See*—
Weiffen, Karl-Heinz, 4,278,536, Cl. 209-422.000.

Klockner-Werke Aktiengesellschaft: *See*—
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Klopach, Robert T.; and Hartman, Rickey E., to American Electronic Laboratories, Inc. Means and method for determining susceptibility to radiated energy. 4,278,933, Cl. 324-58.00R.

Klose, Hans J.: *See*—
Straihammer, Reinhard; Klose, Hans J.; and Schuss, Werner, 4,278,428, Cl. 433-105.000.

Knieps, Horst H., to Hoesch Werke Aktiengesellschaft. Arrangement for covering a guide channel. 4,278,014, Cl. 100-26.000.

Knight, Ernest, Jr., to Du Pont de Nemours, E. I., and Company. Purification of interferon. 4,278,661, Cl. 424-85.000.

Knippel, Willis H., to Pullman Incorporated. Door latch mechanism for bottom dump hopper car. 4,278,382, Cl. 414-388.000.

Kobe, Inc.: *See*—
Erickson, John W., 4,278,399, Cl. 415-199.100.

Kobori, Youichi, to Futaba Denshi Kogyo K.K. Driving circuit for fluorescent display device. 4,278,917, Cl. 315-169.100.

Kocher, Helmut: *See*—
Salbeck, Gerhard; Schonowsky, Hubert; Horlein, Gerhard; Langeluddeke, Peter; and Kocher, Helmut, 4,278,461, Cl. 71-87.000.

Kocks Technik GmbH & Co.: *See*—
Staat, Karl-Hans; Zacharias, Theodor; and Terdenge, Bernhard, 4,277,967, Cl. 72-224.000.

Koether, Bernard G.; and Matison, Gary G., to Food Automation-Service Techniques, Inc. Temperature controller with pulsed heating during idle. 4,278,872, Cl. 219-497.000.

Kohkame, Hisashi: *See—*
Nanaumi, Ken; Shoji, Fusaji; Kohkame, Hisashi; and Era, Susumu, 4,278,786, Cl. 528-179.000.
Nishikawa, Akio; Suzuki, Hiroshi; and Kohkame, Hisashi, 4,278,780, Cl. 525-488.000.
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Koide, Akio: *See—*
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Koivunen, Timo T.: *See—*
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Kokusai Denshin Denwa Co., Ltd.: *See—*
Sato, Masanori; Niiro, Yasuhiko; and Wakabayashi, Hiroharu, 4,278,850, Cl. 179-175.31R.
Koltveit, Arthur O. Jointed tool. 4,277,992, Cl. 81-177.0UJ.
Komabashiri, Takamichi: *See—*
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Komoda, Norihisa: *See—*
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Kondo, Kenichi; Kuronuma, Ryuichi; and Kaneko, Noboru, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. 4,278,325, Cl. 350-331.00T.
Kondo, Kenichi, to Kabushiki Kaisha Daini Seikosha. Driving system of display. 4,278,974, Cl. 340-784.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Goto, Satoshi; Takei, Yoshiaki; Imaho, Ichiro; and Nomori, Hiroyuki, 4,278,746, Cl. 430-59.000.
Konkle, John H. Mobile vehicle invalid lift assembly. 4,278,389, Cl. 414-540.000.
Kono, Hidehiko, to Agency of Industrial Science and Technology; and Ministry of International Trade & Industry. Automatic guidance system for vehicles. 4,278,142, Cl. 180-168.000.
Konoshima, Katunaga: *See—*
Tanaka, Masahiro; and Konoshima, Katunaga, 4,278,101, Cl. 134-167.00C.
Koomey, Inc.: *See—*
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Koomey, Paul C., to Koomey, Inc. Spherical accumulator with buoyant float. 4,278,105, Cl. 137-207.000.
Koopmann, Juergen: *See—*
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Kopacz, Thomas J.; and Jacoby, Charles J., to Kimberly-Clark Corporation. Tape delivery system. 4,278,488, Cl. 156-351.000.
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Korff, Joachim; Fremery, Max; and Zimmermann, Johannes, to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft. Process for the production of acetaldehyde dimethyl acetal. 4,278,819, Cl. 568-594.000.
Kornylak, Andrew T., to Kornylak Corporation. Fluid film continuous processing method and apparatus. 4,278,624, Cl. 264-37.000.
Kornylak Corporation: *See—*
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Kosan Crisplant A/S: *See—*
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Kostello, Edward M.; and Schulte, Kenneth L., Jr., to Rockwell International Corporation. Carbon spacer. 4,277,985, Cl. 74-713.000.
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Kraftwerk Union Aktiengesellschaft: *See—*
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Uhlmann, Gert; Schramm, Konrad; and Kohler, Georg, 4,278,498, Cl. 176-36.00R.
Kramer, Daniel E. Apparatus and method for distributing volatile refrigerant. 4,277,953, Cl. 62-117.000.
Kramer, Remi T. Infant pacifier combination. 4,277,910, Cl. 46-116.000.
Kramer, Rolf: *See—*
Ahlborn, Gunther; Fiedler, Eberhard; Hubsch, Henry; and Kramer, Rolf, 4,278,030, Cl. 105-208.100.
Krause, Hans H. Tilt indicating device. 4,278,854, Cl. 200-52.00A.
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Krautkremer, Franz; and Krautkraemer, Gerd, to Schottel-Werft. Josef Becker GmbH & Co. KG. Hydro-jet propulsion device for driving and controlling of particularly flat-bottomed watercrafts. 4,278,431, Cl. 440-42.000.
Kreysa, Gerhard, to DECHEMA. Electrochemical cell. 4,278,521, Cl. 204-222.000.
Krijgsman, Pieter. Structure for compensating for different thermal expansions of inner and outer concentrically mounted pipes. 4,278,277, Cl. 285-93.000.
Kritske, Victor J., to Mayline Co., Inc. Two direction brake for a drafting table. 4,278,032, Cl. 108-6.000.
Krock, Friedrich W.; Neeff, Rutger; and Kuth, Robert, to Bayer Aktiengesellschaft. Transfer printing process and printing inks and temporary supports for carrying out this process. 4,278,434, Cl. 8-471.000.
Krogsgaard-LarsenPovl, to H. Lundbeck & Co. A/S. Heterocyclic compounds. 4,278,676, Cl. 424-256.000.
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Kuehnle, Manfred R.; Hagenlocher, Arno K.; and Giardino, Nicholas A., to Coulter Systems Corporation. Rectilinear sputtering apparatus and method. 4,278,528, Cl. 204-298.000.
Kugler, Walter R.: *See—*
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Kuiper, Jan, to Lever Brothers Company. Process for the selective hydrogenation of triglyceride oils with a metallic catalyst in the presence of ammonia. 4,278,609, Cl. 260-409.000.
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Kullmann, Dieter, to Siemens Aktiengesellschaft. Cooling arrangement for the rotor of an electric machine. 4,278,906, Cl. 310-52.000.
Kunishi, Mitsumasa: *See—*
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Kurokawa, Junji, to Ricoh Co., Ltd. Inversion developing method for electrophotography and relevant apparatuses. 4,278,343, Cl. 355-10.000.
Kuronuma, Ryuichi: *See—*
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Kuth, Robert: *See—*
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Kutzavitch, Walter G.: *See—*
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Lachner, Hans; and Boer, Werner, to Klockner-Werke Aktiengesellschaft. Connecting bolt and coupling element. 4,278,005, Cl. 411-337.000.
Lafortune, Ray; and Heeb, Waldemar, to American Technology, Inc. Interchangeable pacemaker connector for leads. 4,278,093, Cl. 128-419.00P.
Lafourcade, Paul. Racket frame for ball games. 4,278,251, Cl. 273-73.00G.

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Lambright, Orbie N.; and Thapar, Mangat R., to Cities Service Company. Seismographic data color display. 4,279,026, Cl. 367-70.000.

Lamparsky, Dietmar, to Givaudan Corporation. Novel prenyl 4-caranones. 4,278,817, Cl. 568-374.000.

Lampert, Armin: *See—*
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Landa, Benzion, to Savin Corporation. Method and apparatus for xeroradiography. 4,278,884, Cl. 250-315.200.

Landgraf, Hermann; and Wohlgemuth, Juergen, to Siemens Aktiengesellschaft. D.C. Subfractional horsepower motor with flux shunt for variable RPM adjustment. 4,278,907, Cl. 310-191.000.

Lane, Jack C.: *See—*
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Lane, Jeffrey A., to Lucas Industries Limited. Spline drive arrangement. 4,277,956, Cl. 64-9.00R.

Lane, Jeffrey A., to Lucas Industries Limited. Spline drive arrangements. 4,277,957, Cl. 64-9.00R.

Lane, John E.: *See—*
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Lang, Gernot: *See—*
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Langeluddeke, Peter: *See—*
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Lapeyre, Pierre A. Exercise monitor system and method. 4,278,095, Cl. 128-689.000.

Larson, Dennis L. Log splitter for garden tractors. 4,278,118, Cl. 144-193.00A.

La Rue, Mervin W., Jr.: *See—*
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Las-Laskowski, Stanislaw F.: *See—*
Birch, Peter R.; Ling, Kenneth V.; Power, Claude S.; Robinson, Alan J.; Mahoney, Terrence G.; and Las-Laskowski, Stanislaw F., 4,278,532, Cl. 209-19.000.

Laskaris, Evangelos T.: *See—*
Chari, Madabushi V. K.; Jones, Donald W.; and Laskaris, Evangelos T., 4,278,905, Cl. 310-52.000.

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Sharp, Everett H., 4,278,052, Cl. 122-449.000.

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Parker, Sidney A., 4,277,955, Cl. 62-510.000.

Lenz, Brent L. Skate. 4,278,264, Cl. 280-11.280.

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Yamarik, George J.; and Levengood, James L., 4,278,400, Cl. 416-97.00R.

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Barents, Roelof H.; and Rossell, John B., 4,278,700, Cl. 426-660.000.
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Marschall, Peter; Schlosser, Ewald; and Wolk, Claus, 4,278,949, Cl. 331-94.50H.
Schroder, Ernst; and Wermuth, Jurgen, 4,278,945, Cl. 330-278.000.

Liebermann, Benno E. Method of transferring heat to food articles. 4,278,697, Cl. 426-506.000.

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Buchner, Norbert; and Liede, Dieter, 4,278,716, Cl. 428-35.000.

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Muller, Manfred K.; and Uchiya, Tomoyoshi, 4,278,960, Cl. 337-365.000.

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Savoca, Paul F.; and Lindner, Melvin, 4,278,876, Cl. 219-535.000.

Lindquist, Bjorn V. Cam cleat. 4,278,042, Cl. 114-218.000.

Lindsey Manufacturing Co.: *See—*
Bergman, Fred S.; and Radelet, Reginald P., 4,278,237, Cl. 254-134.3PA.

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Liu, Hua-Kuang, to Lumin, Inc. Halftone screen and method of using same. 4,278,755, Cl. 430-396.000.

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Livesay, Richard E., to Caterpillar Tractor Co. Force and noise isolating apparatus for continuous track system. 4,278,303, Cl. 305-57.000.

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Lobo, Gustavo, Jr.; and Hallbert, Charles G., to Lobo-Kane, Inc. Apparatus for reconditioning bagged material. 4,278,209, Cl. 241-30.000.

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Allen, Paul E., 4,278,230, Cl. 249-81.000.

Lohr, Raymond J. Target game. 4,278,256, Cl. 273-368.000.

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Longsworth, Ralph C., to Air Products and Chemicals, Inc. Cryostat with serviceable refrigerator. 4,277,949, Cl. 62-54.000.

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Beyl, Jean J. A., 4,278,269, Cl. 280-613.000.

Loop-A-Line, Inc.: *See—*
McGahee, Welbourne D., 4,278,231, Cl. 249-95.000.

Lorscheid, Willy; and Wingen, Ludwig, to Czech, Joachim. Container for storing and metering liquids. 4,278,360, Cl. 401-151.000.

Loughlin, Joseph B.: *See—*
Streczyn, Michael; and Loughlin, Joseph B., 4,278,970, Cl. 340-599.000.

Louisiana State University Foundation: *See—*
Srinivasan, Vadake R.; and Choi, Ye-Chin, 4,278,766, Cl. 435-253.000.

Louthan, Rector P.: *See—*
Stacy, Carl J.; and Louthan, Rector P., 4,278,585, Cl. 260-42.150.
Loveless, W. L.; Trott, Richard J.; Heath, Robert H.; and Glick, William L., to GCA Corporation. Automatic wafer processing system and method. 4,278,366, Cl. 406-88.000.
Lowdenslager, John; and Willis, Alan E., to Timex Corporation. Watch with barometric pressure indicator. 4,279,028, Cl. 368-11.000.
Loy, Michael M.; and Sorokin, Peter P., to International Business Machines Corporation. Tunable 16-micron coherent source including parahydrogen Raman transition and method. 4,278,902, Cl. 307-426.000.
Lubitz, Karl; Drew, Jeffrey M.; and Schuhmann, Werner P., to Siemens Aktiengesellschaft. Method and apparatus for inspection of ceramic parts for defects. 4,277,977, Cl. 73-587.000.
Luca, Sebastiano F. Absorbent for animal excreta. 4,278,047, Cl. 119-1.000.
Lucas Industries Limited: *See—*
Griffiths, Trevor J.; Sharpe, Raymond; and Hunt, Peter, 4,278,928, Cl. 322-29.000.
Lane, Jeffrey A., 4,277,956, Cl. 64-9.00R.
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Seilly, Alec H., 4,278,904, Cl. 310-27.000.
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Luedtke, Warren J., to Security Plastics, Inc. Trigger lock system for pump. 4,278,187, Cl. 222-153.000.
Luick, Woodrow W. Convertible rotary mower-vacuum sweeper. 4,277,937, Cl. 56-17.500.
Lukander, Tuula A.: *See—*
von Alfthan, Georg C.; Lukander, Tuula A.; Rautala, Pekka; Sipila, Heikki J.; and Uusitalo, Seppo J., 4,278,885, Cl. 250-370.000.
Lukas, Siegmar: *See—*
Blum, Adolf; Lukas, Siegmar; Schwab, Hermann; and Strobel, Rolf, 4,278,433, Cl. 8-449.000.
Lukatsch, Stephen: *See—*
Danulat, Hans F.; John, Kamar P.; Klein, Helmut; and Lukatsch, Stephen, 4,278,505, Cl. 203-59.000.
Lumin, Inc.: *See—*
Liu, Hua-Kuang, 4,278,755, Cl. 430-396.000.
Lund, Alvin O., deceased: *See—*
Wehrli, Henry A., III; Boomgaard, Dirk J.; and Lund, Alvin O., deceased, 4,278,150, Cl. 187-29.00R.
Lund, Helen B., executrix: *See—*
Wehrli, Henry A., III; Boomgaard, Dirk J.; and Lund, Alvin O., deceased, 4,278,150, Cl. 187-29.00R.
Lunden, Clarence D., to United States of America, Air Force. Coupler for feeding extensible transmission line. 4,278,955, Cl. 333-33.000.
Lutz, Leo O.: *See—*
Burgess, Francis P.; Cormier, Raymond G.; Guiguizian, Jacques; and Lutz, Leo O., 4,278,341, Cl. 355-3.0SH.
Lymer, Donald A.: *See—*
McKendrick, George A. R.; Bartlett, Ian G.; and Lymer, Donald A., 4,277,960, Cl. 68-205.00R.
Lynn, Scott; and Dubs, Bernard J., to University of California, The Regents of the. Oxidative removal of hydrogen sulfide from gaseous streams. 4,278,646, Cl. 423-226.000.
Lyon Metal Products, Incorporated: *See—*
Steinke, Mark H., 4,278,361, Cl. 403-189.000.
Lyons, Robert A. Ball and paddle game and exercise apparatus. 4,278,252, Cl. 273-118.00R.
MacInnis, Martin B.; and Kim, Tai K., to GTE Products Corporation. Method for removing molybdenum from tungstate solutions by solvent extraction. 4,278,642, Cl. 423-54.000.
MacInnis, Martin B.: *See—*
Vanderpool, Clarence D.; MacInnis, Martin B.; McClintic, Robert P.; and Gingerich, Richard G. W., 4,278,463, Cl. 75-0.50A.
Mack, Iris M.; Rowe, Harrison E.; and Schmidt, Ronald V., to Bell Telephone Laboratories, Incorporated. Power divider with randomly varying incremental power transfer. 4,278,321, Cl. 350-96.120.
Mader, Hermann. Semiconductor diode. 4,278,986, Cl. 357-33.000.
Madey, Jerzy: *See—*
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Madison, James B.; and Hiland, Larry K., to Chromalloy American Corporation. Method of treating tardive dyskinesia by oral dosage form of a physostigmine compound. 4,278,667, Cl. 424-232.000.
Madison, James B.; and Hiland, Larry K., to Chromalloy American Corporation. Combination of two or more drugs in a single dosage form wherein one of the drugs is a physostigmine compound. 4,278,679, Cl. 424-263.000.
Maeda, Chiaki: *See—*
Hisamoto, Iwao; Enjo, Naonori; Maeda, Chiaki; Esaka, Takasige; Omure, Yukio; Iida, Toshihiko; and Aomi, Hideki, 4,278,552, Cl. 252-3.000.
Maeda, Masahiro, to Minolta Camera Kabushiki Kaisha. Illumination control apparatus for projection device. 4,278,334, Cl. 353-85.000.
Maeda, Tetsuji: *See—*
Kajimura, Mutsuhiko; and Maeda, Tetsuji, 4,278,627, Cl. 264-45.400.
Magnatex Limited: *See—*
Davis, Kenneth P.; and Boughtflower, Charles A., 4,278,227, Cl. 248-487.000.
Magnolato, Daniele, to Societe d'Assistance Technique pour Produits Nestle S.A. Deacidifying coffee extract with chitosan. 4,278,696, Cl. 426-422.000.
Magoulas, John P.: *See—*
Beyer, Robert E.; and Magoulas, John P., 4,278,444, Cl. 44-59.000.
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Timko born Jozsa, Judit; Blickle, Tibor; Borlai, Oszkar; and Ujhidy, Aurel, 4,278,319, Cl. 350-3.780.
Mahaffy & Harder Engineering Co.: *See—*
Mahaffy, Reid A.; and Hamilton, Joel A., 4,277,931, Cl. 53-412.000.
Mahaffy, Reid A.; and Hamilton, Joel A., to Mahaffy & Harder Engineering Co. Packaging techniques for semi-rigid packages. 4,277,931, Cl. 53-412.000.
Mahlein, Hans F., to Siemens Aktiengesellschaft. Coupling device for coupling of two waveguides. 4,278,322, Cl. 350-96.180.
Mahoney, Terrence G.: *See—*
Birch, Peter R.; Ling, Kenneth V.; Power, Claude S.; Robinson, Alan J.; Mahoney, Terrence G.; and Las-Laskowski, Stanislaw F., 4,278,532, Cl. 209-19.000.
Makino Milling Machine Co., Ltd.: *See—*
Utsumi, Keizo, 4,277,880, Cl. 29-568.000.
Makitalo, Valto J.: *See—*
Lilja, Launo L.; Makitalo, Valto J.; and Koivunen, Timo T., 4,278,494, Cl. 159-16.00A.
Mako Compressors Inc.: *See—*
Klein, Jordan N., 4,278,453, Cl. 55-275.000.
Malec, Robert E., to Ethyl Corporation. Antioxidant. 4,278,554, Cl. 252-52.00R.
Maniquis, Dux C. L., to Alchaldean International Pty. Limited. Rotary sieve for separation of solids from liquids. 4,278,543, Cl. 210-403.000.
Mankey, Harry S.: *See—*
Oswald, Norman D.; and Mankey, Harry S., 4,278,140, Cl. 180-6.480.
Oswald, Norman D.; and Mankey, Harry S., 4,278,141, Cl. 180-6.480.
Mann, Albrecht, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft (M.A.N.). System to supervise operation of a bearing. 4,278,881, Cl. 250-227.000.
Mansolillo, Robert D., to Congoleum Corporation. Process for producing decorative surface covering. 4,278,483, Cl. 156-79.000.
Marcantonio, Arnold F.; and Dailey, Rodney E., to Ball Corporation. Aqueous metal coordination compounds as protective coatings for glass. 4,278,735, Cl. 428-432.000.
Marchesini, Wainer, to WAM dei Fratelli Marchesini s.n.c. Apparatus for severing packages containing granular or powder-like matter and severing the matter therefrom. 4,278,384, Cl. 414-412.000.
Marik, Charles J., to Motorola, Inc. Tangent function generator for AM stereo. 4,278,839, Cl. 179-1.0GS.
Marjollet, Jacques: *See—*
Bessouat, Roger; Marjollet, Jacques; and Palacio, Gerard, 4,278,053, Cl. 122-488.000.
Marley-Wylain Company, The: *See—*
Kaessen, Donald A., 4,278,858, Cl. 200-84.00B.
Marmon Company: *See—*
Schrencongost, Ray B., 4,278,001, Cl. 84-1.260.
Marschall, Peter; Schlosser, Ewald; and Wolk, Claus, to Licentia Patent-Verwaltungs-G.m.b.H. Semiconductor laser structure and manufacture. 4,278,949, Cl. 331-94.50H.
Marschner, Werner; and Minwegen, Heinz, to Bayer Aktiengesellschaft. Dyeing process. 4,278,436, Cl. 8-549.000.
Marshall, Peter E. G.: *See—*
Rawle, Michael D.; and Marshall, Peter E. G., 4,278,350, Cl. 356-155.000.
Marsili, Leonardo: *See—*
Cesti, Pietro; Marsili, Leonardo; and Pasqualucci, Carmine, 4,278,792, Cl. 542-420.000.
Martin, Hans, to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG. Fluid-friction clutch. 4,278,158, Cl. 192-58.00B.
Martin, Henry: *See—*
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,278,613, Cl. 260-465.00D.
Martin, Real. Antiskid traction device for vehicle wheel. 4,278,203, Cl. 238-14.000.
Martinelli, Gabriele, to Fiat Societa Per Azioni. Blade for wind motors. 4,278,401, Cl. 416-230.000.
Martinez, George, Jr. Method and apparatus for conserving energy in an air conditioning system. 4,277,952, Cl. 62-115.000.
Marting Mfg. Inc.: *See—*
Van Dusseldorp, Larry R., 4,278,049, Cl. 119-53.500.
Martins, Wagner W.: *See—*
del Picchia, Walter; Martins, Wagner W.; Silveira, Decio G.; and del Picchia Sergio, 4,279,008, Cl. 361-194.000.
Marumo, Kuniomi: *See—*
Kametaka, Norio; Marumo, Kuniomi; and Nozawa, Tutomu, 4,278,820, Cl. 568-678.000.
Marzocchi, Alfred; Roberts, Michael C.; and Bolen, Charles E., to Owens-Corning Fiberglas Corporation. Bituminous composite reinforced with a filler coated with the reaction product of bitumen and an organosilicon compound. 4,278,470, Cl. 106-281.00R.
Marzola, Roberto; and Garagnani, Enea, to Montedison S.p.A. Glass fiber-reinforced polyolefins. 4,278,586, Cl. 260-42.180.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Urlaub, Alfred; and Chmela, Franz, 4,278,057, Cl. 123-276.000.
Zurner, Hansjurgen; and Fuhrmann, Wolfgang, 4,278,233, Cl. 251-57.000.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft (M.A.N.): *See*—
Mann, Albrecht, 4,278,881, Cl. 250-227.000.
Mashimo, Yukio, to Canon Kabushiki Kaisha. Electric motor drive device for camera. 4,278,337, Cl. 354-60.00R.
Mashko, Sergei V.: *See*—
Debabov, Vladimir G.; Kozlov, Jury I.; Zhdanova, Nelli I.; Khurges, Evgeny M.; Yankovsky, Nikolai K.; Rozinov, Mikhail N.; Shakulov, Rustem S.; Rebentish, Boris A.; Livshits, Vitaly A.; Gusyatiner, Mikhail M.; Mashko, Sergei V.; Moshentseva, Vera N.; Kozyreva, Ljudmila F.; and Arsatiants, Raisa A., 4,278,765, Cl. 435-172.000.
Massachusetts Institute of Technology: *See*—
Suh, Nam P., 4,278,622, Cl. 264-11.000.
Massachusetts Microcomputers, Inc.: *See*—
Beckedorff, David L.; Sporer, Michael; and Watts, Bruce R., 4,279,012, Cl. 364-104.000.
Masuda, Eiji; Sato, Chikara; and Suzuki, Yasoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Integration circuit. 4,278,943, Cl. 328-127.000.
Masuda, Yasushi: *See*—
Matsuhiro, Kenzi; and Masuda, Yasushi, 4,278,329, Cl. 350-357.000.
Masuzawa, Sigeaki; and Saizi, Mituhiro, to Sharp Kabushiki Kaisha. Speech-synthesizer timepiece. 4,279,030, Cl. 368-63.000.
Matison, Gary G.: *See*—
Koether, Bernard G.; and Matison, Gary G., 4,278,872, Cl. 219-497.000.
Matla, Arno; and Matthaei, Horst D., to International Business Machines Corporation. Apparatus for controlling impression in a daisy wheel printer. 4,278,357, Cl. 400-144.200.
Matoba, Taketo: *See*—
Numazawa, Akio; Matoba, Taketo; and Kida, Makoto, 4,277,984, Cl. 74-492.000.
Matsuda, Kichiro: *See*—
Nakagawa, Yasuo; Shimada, Keizo; Nakamura, Tsutomu; and Matsuda, Kichiro, 4,278,779, Cl. 525-432.000.
Matsuda, Minoru; Iwasaki, Hirotsugu; Tamai, Yasukatsu; Iino, Masashi; and Fukutome, Hiroshi. Method for reducing caking property of coal. 4,278,442, Cl. 44-1.00R.
Matsuda, Mutsuhide: *See*—
Ito, Fumio; Harigaya, Isao; Taguchi, Tetsuya; Tamura, Shuichi; Hirohata, Michio; and Matsuda, Mutsuhide, 4,278,336, Cl. 354-51.000.
Matsuhiro, Kenzi; and Masuda, Yasushi, to Ashai Glass Company, Ltd. Electrochromic device with transmissive counter electrode. 4,278,329, Cl. 350-357.000.
Matsui, Kazumi; Takasue, Takashi; and Iwasaki, Masami, to Furukawa Electric Co. Ltd. Belt conveyor transportation system utilizing magnetic attraction. 4,278,164, Cl. 198-334.000.
Matsumoto, Masafumi; and Kotani, Matahira, to Sharp Kabushiki Kaisha. Constant flow rate liquid supply pump. 4,278,984, Cl. 346-140.00R.
Matsumoto, Shinichi: *See*—
Otsuka, Yasuhiro; Hori, Ryuzo; Matsumoto, Shinichi; Uchida, Kiyoshi; and Furutani, Toshinobu, 4,278,509, Cl. 204-1.00T.
Matsuno, Jun-ichi: *See*—
Aso, Kazuo; Nishioka, Takesaburo; Yamamoto, Takemi; Miyai, Naomichi; and Matsuno, Jun-ichi, 4,278,124, Cl. 164-125.000.
Matsushita Electric Industrial Company: *See*—
Minakuchi, Hiroshi, 4,278,925, Cl. 318-314.000.
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Fujita, Makoto; Omiya, Shoji; and Hino, Izumi, 4,278,258, Cl. 369-36.000.
Nakayama, Yoshikazu; Tateishi, Fumikazu; and Fujito, Katsuyuki, 4,278,318, Cl. 350-3.780.
Ohta, Takeo; Akahira, Nobuo; Nakamura, Tatsushi; and Yamashita, Tadaoki, 4,278,734, Cl. 428-432.000.
Sasaki, Toshiharu; Katakabe, Noboru; and Yokoyama, Yoshihiro, 4,279,006, Cl. 360-90.000.
Matsushita, Yoshihiro: *See*—
Ochiai, Michihiko; Morimoto, Akira; and Matsushita, Yoshihiro, 4,278,671, Cl. 424-246 000.
Matsuzaki, Akio, to Casio Computer Co., Ltd. Key button structure for electronic devices. 4,278,861, Cl. 200-340.000.
Matsuzaki, Tokuo: *See*—
Umemura, Sumio; Ohdan, Kyoji; Matsuzaki, Tokuo; Asada, Hiroyuki; and Tsuruoka, Masao, 4,278,614, Cl. 260-465.300.
Matthaei, Horst D.: *See*—
Matla, Arno; and Matthaei, Horst D., 4,278,357, Cl. 400-144.200.
Matty, Thomas C.: *See*—
Kapadia, Jayant K.; and Matty, Thomas C., 4,278,900, Cl. 307-311.000.
Maurer, Gerald L.; and Stefanini, Virginia E., to National Research Laboratories. Method of making an organic metal salt or complex. 4,278,610, Cl. 260-438.100.
Maurer, Rudolf. Method of cooling cooked products by interval showering. 4,278,698, Cl. 426-506.000.
Mauro, Gastone; Lagana, Carlo; Geri, Sergio; and Strepparola, Ezio, to Montedison S.p.A. Vulcanizable mixes based on fluoroelastomers and comprising elastomeric fluoropolyamides as processing aids. 4,278,776, Cl. 525-178.000.
Mawatari, Masahiko; and Tamura, Masaaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital servo apparatus. 4,278,924, Cl. 318-314.000.
Mayline Co., Inc.: *See*—
Kritske, Victor J., 4,278,032, Cl. 108-6.000.
Maynard, Arthur D.: *See*—
Abrams, Joseph L.; and Maynard, Arthur D., 4,278,549, Cl. 210-695.000.
Mayo, George L., to Pyle, Stoddard H.; and Roberts, Wayne R. Wood member cutting apparatus. 4,277,998, Cl. 83-404.100.
McAllister, Jack G. Frame assembly apparatus and method of making same. 4,277,922, Cl. 52-81.000.
McBride, William S., to Dragerwerk Aktiengesellschaft. Chemical oxygen generator. 4,278,637, Cl. 422-122.000.
McCabe, Francis J., to Prefco Products, Inc. Method for installing an angle blade damper. 4,277,870, Cl. 29-157.00R.
McClintic, Robert P.: *See*—
Vanderpool, Clarence D.; MacInnis, Martin B.; McClintic, Robert P.; and Gingerich, Richard G. W., 4,278,463, Cl. 75-0.50A.
McCormick, Charles L., to Hopkins Agricultural Chemical Co. Novel cellulose solutions. 4,278,790, Cl. 536-84.000.
McCrary, Wylee D.: *See*—
Vincett, Paul S.; Pundsack, Arnold L.; Hunter, Robert K., Jr.; and McCrary, Wylee D., 4,278,335, Cl. 354-3.000.
McCreary Tire & Rubber Company: *See*—
McGaughey, Robert S., 4,278,484, Cl. 156-123.00R.
McDermott Incorporated: *See*—
Williams, Billy W., 4,278,041, Cl. 114-210.000.
McDonald, Peter, to Firestone Tire & Rubber Company, The. All-season pneumatic tire tread. 4,278,121, Cl. 152-209.00R.
McDuffee, Richard L., to Twinoak Products, Inc. For toilet bowl cleaning. 4,277,853, Cl. 4-228.000.
McFarland, Douglas F. Wind power generator. 4,278,896, Cl. 290-55.000.
McGahee, Welbourne D., to Loop-A-Line, Inc. Mold for fabricating fishing lures etc. 4,278,231, Cl. 249-95.000.
McGaughey, Robert S., to McCreary Tire & Rubber Company. Pneumatic side wall bonding in radial tire manufacture. 4,278,484, Cl. 156-123.00R.
McGlasson, Paul E.: *See*—
Chambless, Joe G.; and McGlasson, Paul E., 4,278,278, Cl. 285-143.000.
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Schroeder, James E.; and Rasmussen, John F., 4,278,961, Cl. 338-21.000.
McGregor, David: *See*—
Wheeler, Ian R.; Robertson, George H.; and McGregor, David, 4,278,601, Cl. 260-314.500.
McInerney, Eugene F.: *See*—
Lewis, James M.; and McInerney, Eugene F., 4,278,753, Cl. 430-283.000.
McKendrick, George A. R.; Bartlett, Ian G.; and Lymer, Donald A., to Tybar Engineering Pty. Ltd. Synchronization of multiple stream liquid application processes. 4,277,960, Cl. 68-205.00R.
McMahon, Donald H.; and Soref, Richard A., to Sperry Corporation. Liquid crystal matrices. 4,278,327, Cl. 350-347.00V.
McMullan, James P. Instrument mounting fixture. 4,278,869, Cl. 219-217.000.
McReynolds, Oliver B. Seismic explosive charge loader and anchor. 4,278,025, Cl. 181-116.000.
McWilliams, Richard L. Container closure. 4,278,179, Cl. 215-245.000.
Mead Corporation, The: *See*—
Ganguly, Biswa N.; and Paranjpe, Suresh C., 4,278,999, Cl. 358-213.000.
Wood, Prentice J., 4,278,168, Cl. 206-183.000.
MecanARBED S.a.r.L.: *See*—
Elineau, Hubert, 4,278,377, Cl. 414-30.000.
Mecham, Lynn. Spare tire carrier. 4,278,191, Cl. 224-42.210.
Medding, Reuben; and Kay, Peter D., to Consolidated Electronic Industries Proprietary Limited. Constant speed electric motor. 4,278,921, Cl. 318-254.000.
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Beulens, Theophiel, 4,278,542, Cl. 210-321.300.
Medtronic, Inc.: *See*—
Skarstad, Paul M.; Untereker, Darrel F.; and Coury, Arthur J., 4,278,745, Cl. 429-213.000.
Zobel, Don W., 4,278,094, Cl. 128-419.0PG.
Mehlman, Stewart K.: *See*—
Bury, Roland P.; Mehlman, Stewart K.; and Andreini, Rockne J., 4,278,464, Cl. 75-51.000.
Meier, Johann H., to International Business Machines Corporation. All-points addressable dot printer. 4,278,019, Cl. 101-93.040.
Meisel, Thomas C., Jr., to Caterpillar Tractor Co. Log skidder with folding arch. 4,278,392, Cl. 414-569.000.
Mellen, Jerre L., to Albany International Corp. Suction dewatering system with automatically adjusting suction slot. 4,278,497, Cl. 162-252.000.
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Rappas, Alkis S.; Menashi, Jameel; and Douglas, Donald A., 4,278,644, Cl. 423-58.000.
Merger, Franz; and Towae, Friedrich, to BASF Aktiengesellschaft. Process for the preparation of an aryl mono-, di-, and/or polyurethane. 4,278,805, Cl. 560-25.000.
Messerschmitt-Bolkow-Blohm GmbH: *See*—
Nilsson, Karl E.; and Lampert, Armin, 4,278,638, Cl. 422-166.000.
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Danulat, Hans F.; John, Kamar P.; Klein, Helmut; and Lukatsch, Stephen, 4,278,505, Cl. 203-59.000.
Lohrberg, Karl; Wullenweber, Heinz; Muller, Jurgen; and Sermond, Bernd, 4,278,568, Cl. 252-472.000.

Metoff, Rudolph, to General Electric Company. Circular fluorescent lamp unit. 4,278,911, Cl. 313-318.000.

Meyer, Gary D., to Milwaukee Electric Tool Corporation. Safety interlock for electro-magnetic drill stand. 4,278,371, Cl. 408-76.000.

Meyer, Robert E.: *See—*
Wilds, Robert W.; Meyer, Robert E.; Grannen, Walter A., III; and Bryant, Dannie, 4,278,417, Cl. 425-577.000.

Mezrich, Reuben S.: *See—*
Vilkomerson, David H. R.; and Mezrich, Reuben S., 4,277,979, Cl. 73-633.000.

Michal, Gerhard: *See—*
Wulff, Karl; Stahler, Fritz; and Michal, Gerhard, 4,278,760, Cl. 435-8.000.

Michalski, John D.: *See—*
Lawrence, Hopeton S.; and Michalski, John D., 4,278,538, Cl. 209-580.000.

Mijovic, Miroslav V.: *See—*
Sidhu, Jasbir; Simons, Michael J.; and Mijovic, Miroslav V., 4,278,748, Cl. 430-212.000.

Mikkor, Mati; and Shinozaki, Samuel S., to Ford Motor Company. Conductive corrosion resistant material and alkali metal/polysulfide battery employing same. 4,278,708, Cl. 427-126.100.

Miles Laboratories, Inc.: *See—*
White, William I., 4,278,439, Cl. 23-230.00B.

Milholen, William F., to AMI Industries, Inc. Brick stacker having automatic void row forming. 4,278,378, Cl. 414-32.000.

Milkovic, Miran, to General Electric Company. Means for automatically compensating DC magnetization in a transformer. 4,278,940, Cl. 324-127.000.

Millard, Richard J.; Bernard, Walter J.; and Whitman, Alfred, to Sprague Electric Company. Two-stage differential anodization process. 4,278,513, Cl. 204-42.000.

Miller, David W., to Pandrol Limited. Rail clip. 4,278,204, Cl. 238-349.000.

Miller, James R., to B. F. Goodrich Company, The. Removal of residual acrylonitrile monomer. 4,278,582, Cl. 260-29.6AN.

Miller, Mark R.: *See—*
Arnett, Coleman C.; Godfrey, James W.; and Miller, Mark R., 4,278,968, Cl. 340-545.000.

Millhoan, William H., to PPG Industries, Inc. Strap retainer and compression block. 4,278,171, Cl. 206-451.000.

Milwaukee Electric Tool Corporation: *See—*
Meyer, Gary D., 4,278,371, Cl. 408-76.000.

Mimura, Yoshiyuki: *See—*
Kagami, Akiyasu; and Mimura, Yoshiyuki, 4,278,913, Cl. 313-495.000.

Minakuchi, Hiroshi, to Matsushita Electric Industrial Company. Phase-locked loop speed control system using programmable counter for frequency pulling. 4,278,925, Cl. 318-314.000.

Miniaci, Salvatore J.; and Christiansen, James O., to Avery International Corporation. Baggage identification tag. 4,277,902, Cl. 40-2.00R.

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Kono, Hidehiko, 4,278,142, Cl. 180-168.000.

Minolta Camera Kabushiki Kaisha: *See—*
Maeda, Masahiro, 4,278,334, Cl. 353-85.000.
Toriumi, Shiro; Saijo, Takao; Endo, Hiroshi; Kamimura, Kuniaki; and Saito, Takanori, 4,278,346, Cl. 355-45.000.
Uchida, Isamu; Yamazaki, Yasuo; and Egawa, Takeshi, 4,278,339, Cl. 354-155.000.

Minwegen, Heinz: *See—*
Marschner, Werner; and Minwegen, Heinz, 4,278,436, Cl. 8-549.000.

Miskin, Leslie, to ITT Industries, Inc. Sound channel circuit for frequency-modulated signals. 4,278,998, Cl. 358-198.000.

Mitamura, Shuichi: *See—*
Tsuchihashi, Genichi; Ogura, Katsuyuki; and Mitamura, Shuichi, 4,278,802, Cl. 549-72.000.

Mitchell, Kim W.: *See—*
Blakeslee, A. Eugene; and Mitchell, Kim W., 4,278,474, Cl. 136-249.000.

Mitchell, Richard L.; Brundage, Richard B.; and Blachly, Donald L., to Emerson Electric Co. Three dimensional duplicating carving machine. 4,278,117, Cl. 144-144.00R.

Mitsubishi Chemical Industries Limited: *See—*
Murayama, Tetsuo; Otsuka, Shigenori; and Tajima, Tsunemitsu, 4,278,747, Cl. 430-82.000.

Mitsubishi Gas Chemical Company Inc.: *See—*
Taniyama, Susumu; Shimaoka, Goro; and Inoue, Shoichi, 4,278,783, Cl. 528-23.000.

Mitsuya, Kinpei; Miyamoto, Noriaki; and Shiraki, Masao, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Device for sealing spinning rotor in an open-end spinning apparatus. 4,278,259, Cl. 277-12.000.

Miura, Takeshi; and Yamamoto, Yasuo, to Nippon Oil Seal Industry Co., Ltd. Sealing device. 4,278,261, Cl. 277-153.000.

Miya, Bunji, deceased (by Miya, Kazu, heir); by Miya, Fumiaki, heir; and by Nawashiro, Yukiko, heir, to Kao Soap Co., Ltd. Process for preparation of copper-iron-aluminum hydrogenation catalyst. 4,278,567, Cl. 252-466.00J.

Miya, Fumiaki, heir: *See—*
Miya, Bunji, deceased; Miya, Fumiaki, heir; and Nawashiro, Yukiko, heir, 4,278,567, Cl. 252-466.00J.

Miya, Kazu, heir: *See—*
Miya, Bunji, deceased; Miya, Fumiaki, heir; and Nawashiro, Yukiko, heir, 4,278,567, Cl. 252-466.00J.

Miyai, Naomichi: *See—*
Aso, Kazuo; Nishioka, Takesaburo; Yamamoto, Takemi; Miyai, Naomichi; and Matsuno, Jun-ichi, 4,278,124, Cl. 164-125.000.

Miyake, Hidekazu: *See—*
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Miyamoto, Noriaki: *See—*
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Miyasaka, Kiyoshi: *See—*
Baba, Fumio; Miyasaka, Kiyoshi; Yabu, Takashi; and Mogi, Jun-ichi, 4,278,989, Cl. 357-59.000.

Miyazaki, Shizuo: *See—*
Watanabe, Hiroyuki; Miyoshi, Eiji; Kojima, Haruo; Yoshida, Takeshi; Kato, Masaaki; and Miyazaki, Shizuo, 4,278,865, Cl. 219-99.000.

Miyoshi, Eiji: *See—*
Watanabe, Hiroyuki; Miyoshi, Eiji; Kojima, Haruo; Yoshida, Takeshi; Kato, Masaaki; and Miyazaki, Shizuo, 4,278,865, Cl. 219-99.000.

Mizoule, Henri; and Gardel, William. Changing the color of a doll's eyes. 4,277,911, Cl. 46-135.00R.

Mizumoto, Morihide, to Olympus Optical Co., Ltd. Medical camera system. 4,278,077, Cl. 128-4.000.

Mizuno, Hiroyuki: *See—*
Kiba, Gunji; and Mizuno, Hiroyuki, 4,278,286, Cl. 296-93.000.

Mizuno, Sueo; Nozu, Toshihiro; Kanaya, Yoshihiro; and Koumura, Masahiko, to Rinnai Kabushiki Kaisha. Combination microwave and gas oven. 4,278,862, Cl. 219-10.55B.

Mizutani, Hitoshi; Nakajima, Zenji; Horikiri, Yoshito; Harada, Hiroshi; and Yokotsuji, Yasushi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Toyo Rubber Industry Co., Ltd., The. Rubber boot for use in universal joint. 4,278,262, Cl. 277-212.0FB.

Moberg, Sigurd M., to E. J. Brooks Company. Seal. 4,278,281, Cl. 292-320.000.

Mobil Oil Corporation: *See—*
Beyer, Robert E.; and Magoulas, John P., 4,278,444, Cl. 44-59.000.
Chen, Nai Y.; and Reagan, William J., 4,278,565, Cl. 252-455.00Z.
Chu, Chin-Chiun; and Kaeding, Warren W., 4,278,827, Cl. 585-467.000.
Pelrine, Bruce P., 4,278,564, Cl. 252-450.000.
Yan, Tsoung Y.; and Audeh, Costandi A., 4,278,469, Cl. 106-278.000.
Yan, Tsoung-yuan; and Espenscheid, Wilton F., 4,278,292, Cl. 299-5.000.

Modern Controls, Inc.: *See—*
Bachofer, Kenneth W., 4,278,918, Cl. 315-169.400.

Modular Data Systems, Inc.: *See—*
Wolschlager, Gerald J., 4,277,972, Cl. 73-862.160.

Moench, Theodor P.; and Hanstein, Friedrich, to Rohm GmbH. Shaped body of extruded acrylic glass. 4,278,723, Cl. 428-192.000.

Mogi, Jun-ichi: *See—*
Baba, Fumio; Miyasaka, Kiyoshi; Yabu, Takashi; and Mogi, Jun-ichi, 4,278,989, Cl. 357-59.000.

Molins Limited: *See—*
Horsley, John K., 4,278,489, Cl. 156-361.000.

Monsanto Company: *See—*
Coran, Aubert Y.; and Patel, Raman, 4,278,572, Cl. 260-3.000.
Heaps, John F.; and Gardner, Donald M., 4,278,782, Cl. 526-326.000.
Tremont, Samuel J.; Williamson, Alex N.; and Solodar, Arthur J., 4,278,824, Cl. 585-428.000.
Tremont, Samuel J.; and Williamson, Alex N., 4,278,825, Cl. 585-428.000.
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Monsheimer, Rolf; and Pfleiderer, Ernst, to Rohm GmbH. Soaking method. 4,278,432, Cl. 8-94.180.

Montedison S.p.A.: *See—*
Marzola, Roberto; and Garagnani, Enea, 4,278,586, Cl. 260-42.180.
Mauro, Gastone; Lagana, Carlo; Geri, Sergio; and Strepparola, Ezio, 4,278,776, Cl. 525-178.000.

Monteil, Marcel: *See—*
Ailloud, Jean; and Monteil, Marcel, 4,278,500, Cl. 176-37.000.

Montgomery, Robert L.; and Smith, Stuart B., to Southeastern Foam Products, Inc. Method for pre-expanding and molding expandable thermoplastic polymer particles. 4,278,628, Cl. 264-45.500.

Mookherjee, Braja D.: *See—*
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,278,098, Cl. 131-276.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,278,569, Cl. 252-522.00R.

Moreau, Robert D.: *See—*
Haas, Howard C.; Jasne, Stanley J.; and Moreau, Robert D., 4,278,803, Cl. 556-419.000.

Morel, Andre. Breaking machine with automatic recycling of the fibres and the process for its operation. 4,278,207, Cl. 241-4.000.

Morgan, Barrie O.; and Wilkinson, Mitchell M., to Datotek, Inc. Dynamic frequency and time voice encryption system and method. 4,278,840, Cl. 179-1.50S.

Morgan, Ned L.: *See—*
Gregor, Robert A.; and Morgan, Ned L., 4,278,301, Cl. 305-11.000.

Morganstern, Kennard H.: *See*—
Bjellqvist, Bengt; Reitberger, Torbjorn; and Morganstern, Kennard H., 4,278,518, Cl. 204-159.200.

Morihisa, Mitsuo. DC-DC Converter for solid state watches. 4,279,010, Cl. 363-60.000.

Morimoto, Akira: *See*—
Ochiai, Michihiko; Morimoto, Akira; and Matsushita, Yoshihiro, 4,278,671, Cl. 424-246.000.

Morimoto, Syogo: *See*—
Nakazawa, Tetsuo; Sakai, Junji; Morimoto, Syogo; Tanigawa, Takatoshi; Takahashi, Ryoji; and Okazaki, Seiji, 4,278,581, Cl. 260-29.60M.

Morin, Edward H.: *See*—
Esthimer, William F.; Morin, Edward H.; and Trudell, Richard E., 4,277,945, Cl. 60-710.000.

Morishita, Hirosada: *See*—
Mukoh, Akio; Abe, Hidetoshi; Kawakami, Hideaki; Nagae, Yoshiharu; Morishita, Hirosada; and Kaneko, Eiji, 4,278,328, Cl. 350-349.000.

Moritani, Nakanobu: *See*—
Oda, Hajime; Fujita, Masanori; and Moritani, Nakanobu, 4,279,029, Cl. 368-29.000.

Morris, Bernard L.: *See*—
Agraz-Guerena, Jorge; Katz, Lewis E.; and Morris, Bernard L., 4,278,705, Cl. 427-93.000.

Morris, Hue T.: *See*—
Benke, Alan H.; Morris, Hue T.; and Nady, Louie A., 4,278,799, Cl. 548-215.000.

Morriss, Jeffrey C., to Bell Telephone Laboratories, Incorporated. Electromagnetic arrangement for measuring electrical current. 4,278,938, Cl. 324-117.00R.

Morrissey, Ronald J., to Technic, Inc. Bright palladium electrodeposition solution. 4,278,514, Cl. 204-47.000.

Morse, Donald B., to Kemlite Corporation. Machine for making resin panels. 4,278,491, Cl. 156-501.000.

Moseman, Merlin H.: *See*—
Hatfield, James R.; Moseman, Merlin H.; Graham, James R.; and Hirt, Thomas J., 4,278,788, Cl. 528-494.000.

Moser, Jesse L.; and Shoemaker, John R., to AMP Incorporated. Connector assembly for flat cable conductors in multiple rows. 4,278,314, Cl. 339-99.00R.

Moshentseva, Vera N.: *See*—
Debabov, Vladimir G.; Kozlov, Jury I.; Zhdanova, Nelli I.; Khurges, Evgeny M.; Yankovsky, Nikolai K.; Rozinov, Mikhail N.; Shakulov, Rustem S.; Rebentish, Boris A.; Livshits, Vitaly A.; Gusyatiner, Mikhail M.; Mashko, Sergei V.; Moshentseva, Vera N.; Kozyreva, Ljudmila F.; and Arsatiants, Raisa A., 4,278,765, Cl. 435-172.000.

Motoren-und Turbinen-Union Munich GmbH: *See*—
Bauer, Heinrich F.; and Feitzelmayer, Ernst, 4,277,886, Cl. 29-860.000.

Motorola, Inc.: *See*—
Lee, Robert D.; and Ulmer, Richard W., 4,278,929, Cl. 323-311.000.
Marik, Charles J., 4,278,839, Cl. 179-1.0GS.
Starai, Terrence M.; Champlin, John H., Jr.; and Johnson, Randall J., 4,278,957, Cl. 333-202.000.

Mouhot, Allan R.: *See*—
Daley, Philip A.; Mouhot, Allan R.; and Felice, Dan C., 4,278,148, Cl. 182-181.000.

Mower, Michael L.; and Carleton, William A., to Facet Enterprises, Inc. Coupling arrangement for an electromagnetic clutch. 4,278,161, Cl. 192-84.00C.

Mross, Wolf D.; Titzenthaler, Eckart; Koopmann, Juergen; Schwarzmann, Matthias; and Vogt, Volker, to BASF Aktiengesellschaft. Manufacture of an ethylene oxide catalyst. 4,278,562, Cl. 252-430.000.

Mueller, Edward E.; Harrod, Michael K.; and Hagemeister, Frederick C., to Whirl-Air-Flow Corporation. Bag opening and emptying apparatus. 4,278,383, Cl. 414-412.000.

Mueller, Harry B.: *See*—
Nelson, Edward I.; Mueller, Harry B.; and Lane, John E., 4,278,965, Cl. 340-365.00P.

Mueller, Richard; and Himmler, Guenther, to Gebr. Hofmann GmbH & Co. KG. Process and apparatus for measurement of nonuniformity of mass in a rotor. 4,277,976, Cl. 73-457.000.

Mues, Melvin V.: *See*—
Hausermann, Marten C.; and Mues, Melvin V., 4,277,915, Cl. 51-157.000.

Mukoh, Akio; Abe, Hidetoshi; Kawakami, Hideaki; Nagae, Yoshiharu; Morishita, Hirosada; and Kaneko, Eiji, to Hitachi, Ltd. Guest-host liquid crystal display device. 4,278,328, Cl. 350-349.000.

Mukunoki, Yasuo; Yoneyama, Masakazu; Yamaguchi, Jiro; Naito, Hideki; and Sasaki, Jun, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,278,757, Cl. 430-512.000.

Muller, Erwin: *See*—
Saleck, Wilhelm; Wolff, Erich; and Muller, Erwin, 4,278,759, Cl. 430-627.000.

Muller, Jurgen: *See*—
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Muller, Lutz: *See*—
Stoltefuss, Jurgen; Muller, Lutz; Puls, Walter; and Sitt, Rudiger, 4,278,683, Cl. 424-267.000.

Muller, Manfred K.; and Uchiya, Tomoyoshi, to Limitor AG; and Uchiya Thermostat Co. Temperature controlled bimetal switch. 4,278,960, Cl. 337-365.000.

Munther, Christian. Drawing instruments. 4,277,893, Cl. 33-18.00R.

Murakami, Shigeru: *See*—
Honda, Kiyoshi; Kuriyama, Kazuya; Murakami, Shigeru; Sugawara, Ryozo; and Nakamura, Chiaki, 4,278,728, Cl. 428-313.000.

Murakami, Yoichi: *See*—
Nakamura, Hidehisa; Hori, Ryoichi; Isomoto, Emiko; and Murakami, Yoichi, 4,278,575, Cl. 260-22.0CB.

Murata, Koichi: *See*—
Okamoto, Yoshihiko; Yoshizawa, Tamotu; Ohta, Takahiro; and Murata, Koichi, 4,278,347, Cl. 355-68.000.

Murata Manufacturing Co., Ltd.: *See*—
Takaya, Tadashi, 4,278,851, Cl. 179-179.000.

Murayama, Tetsuo; Otsuka, Shigenori; and Tajima, Tsunemitsu, to Mitsubishi Chemical Industries Limited. Electrophotographic plate comprising a conductive substrate and a photosensitive layer containing an organic photoconductor layer composed of a hydrazone compound. 4,278,747, Cl. 430-82.000.

Murdock, Keith C., to American Cyanamid Company. Heteroalkylenebisanthraquinones. 4,278,605, Cl. 260-367.000.

Murdock, Keith C.; and Durr, Frederick E., to American Cyanamid Company. 1,4-Bis(substituted-amino)-5,8-dihydroxy-anthraquinones and leuco bases thereof. 4,278,689, Cl. 424-330.000.

Murphy, Edward J., to DeSoto, Inc. Aqueous coating systems containing bisphenol-formaldehyde ethers. 4,278,579, Cl. 260-29.300.

Muschelknautz, Horst, deceased: *See*—
Sauka, Klaus; and Muschelknautz, Horst, deceased, 4,278,298, Cl. 303-3.000.

Muschelknautz, Ingeborg: *See*—
Sauka, Klaus; and Muschelknautz, Horst, deceased, 4,278,298, Cl. 303-3.000.

Myers, Harry K., Jr.: *See*—
Schneider, Abraham; and Myers, Harry K., Jr., 4,278,823, Cl. 585-22.000.

Myers, Robert D., to Harnischfeger Corporation. Method of making welded structure. 4,278,863, Cl. 219-73.100.

Myrens Verksted A/S: *See*—
Fritzvold, Bjorn H., 4,278,496, Cl. 162-19.000.

N. V. Bekaert S.A.: *See*—
Wieme, Andre, 4,278,726, Cl. 428-229.000.

Nabutovsky, Iosif B.: *See*—
Andronov, Valery A.; Boyarsky, Alexandr I.; Emelyanov, Viktor I.; and Nabutovsky, Iosif B., 4,279,009, Cl. 363-35.000.

Nadkarni, Ravindra M.: *See*—
Santhanam, Chakra J.; and Nadkarni, Ravindra M., 4,278,539, Cl. 210-724.000.

Nady, Louie A.: *See*—
Benke, Alan H.; Morris, Hue T.; and Nady, Louie A., 4,278,799, Cl. 548-215.000.

Nagae, Yoshiharu: *See*—
Mukoh, Akio; Abe, Hidetoshi; Kawakami, Hideaki; Nagae, Yoshiharu; Morishita, Hirosada; and Kaneko, Eiji, 4,278,328, Cl. 350-349.000.

Nagai, Hiroshi, to Yamaha Hatsudoki Kabushiki Kaisha. Parking brake release apparatus. 4,278,143, Cl. 180-282.000.

Nagai, Sumiyoshi; and Izumi, Tokio, to Sansho Pharmaceutical Co., Ltd. Cosmetic composition containing kojic acid ester. 4,278,656, Cl. 424-62.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Rear hub for a bicycle having improved spoke protector mounting. 4,278,265, Cl. 280-160.100.

Nagler, Georg: *See*—
Hofmann, Otto; and Nagler, Georg, 4,278,879, Cl. 235-380.000.

Naito, Hideki: *See*—
Mukunoki, Yasuo; Yoneyama, Masakazu; Yamaguchi, Jiro; Naito, Hideki; and Sasaki, Jun, 4,278,757, Cl. 430-512.000.

Naito, Motoharu: *See*—
Yasui, Toshio; and Naito, Motoharu, 4,278,971, Cl. 340-635.000.

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Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,278,675, Cl. 424-253.000.

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Kawamura, Hiromitsu; Nakajima, Tokuyoshi; Shibuya, Yoshimichi; and Yokokura, Hisao, 4,278,326, Cl. 350-343.000.

Nakajima, Zenji: *See*—
Mizutani, Hitoshi; Nakajima, Zenji; Horikiri, Yoshito; Harada, Hiroshi; and Yokotsuji, Yasushi, 4,278,262, Cl. 277-212.0FB.

Nakamura, Chiaki: *See*—
Honda, Kiyoshi; Kuriyama, Kazuya; Murakami, Shigeru; Sugawara, Ryozo; and Nakamura, Chiaki, 4,278,728, Cl. 428-313.000.

Nakamura, Hidehisa; Hori, Ryoichi; Isomoto, Emiko; and Murakami, Yoichi, to Dainippon Ink & Chemicals, Inc. Modified acrylic copolymer and coating composition comprising such copolymer. 4,278,575, Cl. 260-22.0CB.

Nakamura, Ken; Sugihara, Kunihiko; and Ishizawa, Shizuo, to Nissan Motor Company, Limited. Internal combustion engine with an exhaust gas purifying system. 4,278,063, Cl. 123-568.000.

Nakamura, Kizashi: *See*—
Ihara, Susumu; and Nakamura, Kizashi, 4,278,935, Cl. 324-61.00P.
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Ohta, Takeo; Akahira, Nobuo; Nakamura, Tatsushi; and Yamashita, Tadaoki, 4,278,734, Cl. 428-432.000.
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Nakano, Hiroshige; Katagiri, Shigenobu; and Nishino, Shinichi, to Hitachi Koki Company, Limited. Magnetic interference prevention system. 4,278,021, Cl. 101-93.290.
Nakayama, Yoshikazu; Tateishi, Fumikazu; and Fujito, Katsuyuki, to Matsushita Electric Industrial Co., Ltd. Holographic reconstructing apparatus. 4,278,318, Cl. 350-3.780.
Nakazawa, Tetsuo; Sakai, Junji; Morimoto, Syogo; Tanigawa, Takatoshi; Takahashi, Ryoji; and Okazaki, Seiji, to Hitachi, Ltd.; and Hitachi Metals, Ltd. Mold binder material. 4,278,581, Cl. 260-29.60M.
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Nanaumi, Ken; Shoji, Fusaji; Kohkame, Hisashi; and Era, Susumu, to Hitachi, Ltd. Aromatic polyamides containing ether linkages and process for producing same. 4,278,786, Cl. 528-179.000.
Nara, Tamotsu; and Kamiya, Soji, to Taiho Kogyo Co., Ltd. Aluminum-tin base bearing alloy and composite. 4,278,740, Cl. 428-653.000.
Nardi, Giovanni, to Gilardini S.p.A. Air filter and air filter container. 4,278,455, Cl. 55-337.000.
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Burgess, Francis P.; Cormier, Raymond G.; Guiguizian, Jacques; and Lutz, Leo O., 4,278,341, Cl. 355-3.0SH.
Davis, Austin E.; Cormier, Raymond G.; and Caggiula, Christopher A., 4,278,345, Cl. 355-15.000.
Natansohn, Samuel; and Su, Sophia R., to GTE Laboratories Incorporated. Resin sorption process for extracting tungsten. 4,278,643, Cl. 423-54.000.
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Billington, William P., 4,278,183, Cl. 221-211.000.
National Research Laboratories: *See*—
Maurer, Gerald L.; and Stefanini, Virginia E., 4,278,610, Cl. 260-438.100.
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Tessler, Martin M., 4,278,573, Cl. 260-17.4GC.
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Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,278,699, Cl. 426-624.000.
Nauheimer, James F., to Container Corporation of America. Cushioning insert for frangible objects. 4,278,170, Cl. 206-422.000.
Nausedas, Joseph A.; and Eichin, Harry P., to Union Carbide Corporation. Bags wicketed on a flexible binding. 4,277,930, Cl. 53-396.000.
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Miya, Bunji, deceased; Miya, Fumiaki, heir; and Nawashiro, Yukiko, heir, 4,278,567, Cl. 252-466.00J.
Nawata, Kazumasa: *See*—
Ohno, Kenichi; Hosomizu, Tohru; and Nawata, Kazumasa, 4,278,897, Cl. 307-455.000.
NCR Canada Ltd. - NCR Canada Ltee: *See*—
Johannesson, Brian J., 4,278,018, Cl. 101-93.000.
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, to Roussel Uclaf. Tetrahydropyridinyl indoles. 4,278,677, Cl. 424-263.000.
Neeff, Rutger: *See*—
Krock, Friedrich W.; Neeff, Rutger; and Kuth, Robert, 4,278,434, Cl. 8-471.000.
Neff, Vance E.: *See*—
Cameron, Larry E.; Cook, Kenneth J.; Neff, Vance E.; and Rowland, Keith L., 4,279,013, Cl. 364-105.000.
Neiman SA: *See*—
Lipschutz, Paul, 4,277,962, Cl. 70-423.000.
Nelli, Pierre. Fish line guide assembly. 4,277,906, Cl. 43-24.000.
Nelson, Edward I.; Mueller, Harry B.; and Lane, John E., to Burroughs Corporation. Photo-optical keyboard having n-key rollover. 4,278,965, Cl. 340-365.00P.
Nemesi, Stephen A., to Wehr Corporation. Filter apparatus with reverse flow cleaning. 4,278,454, Cl. 55-302.000.
Netravali, Arun N.; Robbins, John D.; and Stuller, John A., to Bell Telephone Laboratories, Incorporated. Technique for encoding pictorial information. 4,278,996, Cl. 358-136.000.
Nevins, Glenn T.; and Keely, William A., to Teledyne Industries, Inc. Automatic electron beam deflecting circuit. 4,278,866, Cl. 219-121.0EC.
New England Nuclear Corporation: *See*—
Harris, S. Richard; and Bonci, Darlene K., 4,278,653, Cl. 424-1.000.
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Casacci, Severin, 4,278,108, Cl. 137-613.000.
NGK Insulators, Ltd.: *See*—
Ozaki, Sei; and Otsu, Shuichi, 4,278,412, Cl. 425-198.000.
NGK Spark Plug Co., Ltd.: *See*—
Saito, Shigeo; and Tsunooka, Tsutomu, 4,278,000, Cl. 84-1.160.
Nicolaides, Ernest D.: *See*—
Haskell, Theodore H.; Hutt, Marland P., Jr.; Nicolaides, Ernest D.; Woo, Peter W. K.; and Huang, Gin G., 4,278,681, Cl. 424-266.000.
Nicollian, Edward H.; Seidel, Harold; and Smith, George E., to Bell Telephone Laboratories, Incorporated. Precision frequency source using integrated circuit elements. 4,278,947, Cl. 331-1.00R.
Niegisch, Walter D., to Union Carbide Corporation. Ultra-fine fibers and method for making same. 4,278,623, Cl. 264-28.000.
Nielsen, Axel L. Adjustable liquid level control for pumps. 4,278,402, Cl. 417-38.000.
Nielsen, Jacob A.; and Prydtz, Ole, to Kosan Crisplant A/S. Tray conveyor. 4,278,165, Cl. 198-365.000.
Niemann, Elfriede; Stagg, Brian H.; and Cowan, Stuart I., to Hoechst Aktiengesellschaft. Process for determining ferritin. 4,278,652, Cl. 424-1.000.
Niepiekto, Andrzej: *See*—
Doerffer, Jerzy; Madey, Jerzy; Kozlowski, Jan; and Niepiekto, Andrzej, 4,278,040, Cl. 114-170.000.
Niiro, Yasuhiko: *See*—
Sato, Masanori; Niiro, Yasuhiko; and Wakabayashi, Hiroharu, 4,278,850, Cl. 179-175.31R.
Nikaido, Teruo, to Tomy Kogyo Co., Inc. Floating toy. 4,277,908, Cl. 46-92.000.
Nilssen, Ole K. Simple, high-efficiency inverter circuits. 4,279,011, Cl. 363-133.000.
Nilsson, Karl E.; and Lampert, Armin, to Messerschmitt-Bolkow-Blohm GmbH. Gas generator construction. 4,278,638, Cl. 422-166.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Ogita, Minoru; and Takeyama, Masahiro, 4,278,980, Cl. 343-748.000.
Nippon Kogaku K.K.: *See*—
Wakabayashi, Hiroshi; and Okuyama, Takeshi, 4,278,853, Cl. 200-16.00D.
Nippon Oil Seal Industry Co., Ltd.: *See*—
Miura, Takeshi; and Yamamoto, Yasuo, 4,278,261, Cl. 277-153.000.
Nippon Stud Welding Co. Ltd.: *See*—
Watanabe, Hiroyuki; Miyoshi, Eiji; Kojima, Haruo; Yoshida, Takeshi; Kato, Masaaki; and Miyazaki, Shizuo, 4,278,865, Cl. 219-99.000.
Nippon Zeon Co. Ltd.: *See*—
Sekiya, Masayoshi, 4,278,583, Cl. 260-29.70H.
Nippondenso Co., Ltd.: *See*—
Yasui, Toshio; and Naito, Motoharu, 4,278,971, Cl. 340-635.000.
Nira Nucleare Italiana Reattori Avanzati: *See*—
Avanzini, Pier G., 4,278,404, Cl. 417-50.000.
Nishikawa, Akio; Suzuki, Hiroshi; and Kohkame, Hisashi, to Hitachi, Ltd.; and Hitachi Chemical Co., Ltd. Thermosetting resin composition comprising epoxy compound and reaction product of unsaturated dicarboxylic acid anhydride and excess diamine. 4,278,780, Cl. 525-488.000.
Nishikawa, Masao: *See*—
Inoue, Hidehiko; Nishikawa, Masao; and Anno, Nobuo, 4,278,266, Cl. 280-276.000.
Nishimiya, Torazo; and Okumura, Masamitsu, to Hitachi, Ltd. Current-stroke proportional type solenoid valve. 4,278,959, Cl. 335-262.000.
Nishimura, Akimasa: *See*—
Toyama, Masamichi; Hirata, Noritsugu; Iwama, Hideto; Okajima, Hidekazu; and Nishimura, Akimasa, 4,278,340, Cl. 354-195.000.
Nishino, Shinichi: *See*—
Nakano, Hiroshige; Katagiri, Shigenobu; and Nishino, Shinichi, 4,278,021, Cl. 101-93.290.
Nishioka, Takesaburo: *See*—
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Nissan Motor Company, Limited: *See*—
Nakamura, Ken; Sugihara, Kunihiko; and Ishizawa, Shizuo, 4,278,063, Cl. 123-568.000.
Tsuda, Yoshitaka; Sodeyama, Kaoru; and Tsunada, Naomasa, 4,278,299, Cl. 303-6.00C.
Yasuhara, Seishi; Tamazawa, Tsuyoshi; and Yamauchi, Katsuto, 4,278,407, Cl. 417-292.000.
Noguchi, Kazuo; Fujimaki, Hiroto; Tagaya, Kiyoshi; Ajima, Shigetoshi; Takada, Kazutoshi; and Okuda, Kensuke, to Kureha Kagaku Kogyo Kabushiki Kaisha. Organic friction material. 4,278,584, Cl. 260-38.000.
Nojiro, Kikuo: *See*—
Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, 4,278,699, Cl. 426-624.000.
Nomori, Hiroyuki: *See*—
Goto, Satoshi; Takei, Yoshiaki; Imaho, Ichiro; and Nomori, Hiroyuki, 4,278,746, Cl. 430-59.000.
Noren, Kurt L. R.; and Noren, Lennart N. Apparatus for preparing a hot liquid medium, preferably warm or hot beverages, such as tea and coffee. 4,278,013, Cl. 99-288.000.
Noren, Lennart N.: *See*—
Noren, Kurt L. R.; and Noren, Lennart N., 4,278,013, Cl. 99-288.000.
Northern Telecom Limited: *See*—
Osborne, Brian T., 4,278,315, Cl. 339-113.00B.
Northrop Corporation: *See*—
Grohe, Lester R., 4,278,927, Cl. 318-721.000.
Norton, Robert H.: *See*—
Breckinridge, James B.; Norton, Robert H.; Schindler, Rudolf A.; and Frosch, Robert A., 4,278,351, Cl. 356-345.000.
Norton, William W.; and Boehmer, Henry, to Baxter Travenol Laboratories, Inc. Flexible collapsible container with a stiffening member. 4,278,198, Cl. 229-55.000.
Nossen, Edward J., to RCA Corporation. Range determining system. 4,278,977, Cl. 343-6.5LC.

Novitsky, Eduard G.: *See*—
Nametkin, Nikolai S.; Durgarian, Sergei G.; Novitsky, Eduard G.; Filippova, Valentina G.; Gladkova, Natalya K.; and Teplyakov, Vladimir V., 4,278,774, Cl. 525-100.000.

Nowak, Peter; and Rieger, Reinhard. Apparatus for maintaining a rotating member at a constant speed. 4,278,923, Cl. 318-302.000.

Nozawa, Tutomu: *See*—
Kametaka, Norio; Marumo, Kuniomi; and Nozawa, Tutomu, 4,278,820, Cl. 568-678.000.

Nozu, Toshihiro: *See*—
Mizuno, Sueo; Nozu, Toshihiro; Kanaya, Yoshihiro; and Koumura, Masahiko, 4,278,862, Cl. 219-10.55B.

Nuesch, Jakob: *See*—
Traxler, Peter; Gruner, Johannes; and Nuesch, Jakob, 4,278,665, Cl. 424-181.000.

Numazawa, Akio; Matoba, Taketo; and Kida, Makoto, to Toyota Jidosha Kogyo Kabushiki Kaisha. Steering shaft support device. 4,277,984, Cl. 74-492.000.

Nyegaard & Co. A/S: *See*—
Rakli, Fridtjov B.; and Kelly, Michael J., 4,278,654, Cl. 424-5.000.

O. Mustad & Son A/S: *See*—
Huse, Per, 4,277,905, Cl. 43-4.000.

Oaten, Albert W., to International Business Machines Corporation. Print wire actuator block assembly for printers. 4,278,020, Cl. 101-93.050.

Oberg, Edwin T., to West End Glass Co. Limited. Glass cutting means. 4,277,889, Cl. 30-164.950.

O'Brien, John P.: *See*—
Allcock, Harry R.; Allen, Robert W.; and O'Brien, John P., 4,278,660, Cl. 424-78.000.

Ochiai, Michihiko; Morimoto, Akira; and Matsushita, Yoshihiro, to Takeda Chemical Industries, Ltd. 7-[2-(2-Aminothiazol-4-yl)-2-(syn)-methoxyiminoacetamido] cephalosporins. 4,278,671, Cl. 424-246.000.

O'Connell, Betty. Dance/gymnastic footlet. 4,277,897, Cl. 36-106.000.

O'Connor, Paul B.; and Pearson, Arthur D., to Bell Telephone Laboratories, Incorporated. Optical fiber fabrication method and apparatus. 4,278,458, Cl. 65-2.000.

Oda, Hajime; Fujita, Masanori; and Moritani, Nakanobu, to Kabushiki Kaisha Seikosha. Electronic timepiece. 4,279,029, Cl. 368-29.000.

Ogino, Yasuo: *See*—
Kato, Yuzo; Ogino, Yasuo; Hiraga, Ryozo; Yoshinari, Hideki; Tozuka, Masao; Kano, Ichiro; and Suzuki, Akiyoshi, 4,278,893, Cl. 250-548.000.

Ogita, Minoru; and Takeyama, Masahiro, to Nippon Gakki Seizo Kabushiki Kaisha. Antenna input circuit for radio receiver. 4,278,980, Cl. 343-748.000.

Ogura, Katsuyuki: *See*—
Tsuchihashi, Genichi; Ogura, Katsuyuki; and Mitamura, Shuichi, 4,278,802, Cl. 549-72.000.

Ogura, Toshio, to Hitachi, Ltd. Magnetrons. 4,278,915, Cl. 315-39.710.

Ohdan, Kyoji: *See*—
Umemura, Sumio; Ohdan, Kyoji; Matsuzaki, Tokuo; Asada, Hiroyuki; and Tsuruoka, Masao, 4,278,614, Cl. 260-465.300.

Ohio Nuclear, Inc.: *See*—
Erker, Joseph W., 4,278,889, Cl. 250-445.00T.

Ohlson, Kjell F. Arrangement for suspending a pivoted side-board. 4,278,284, Cl. 296-36.000.

Ohno, Kenichi; Hosomizu, Tohru; and Nawata, Kazumasa, to Fujitsu Limited. Large scale semiconductor integrated circuit device. 4,278,897, Cl. 307-455.000.

Ohta, Takahiro: *See*—
Okamoto, Yoshihiko; Yoshizawa, Tamotu; Ohta, Takahiro; and Murata, Koichi, 4,278,347, Cl. 355-68.000.

Ohta, Takeo; Akahira, Nobuo; Nakamura, Tatsushi; and Yamashita, Tadaoki, to Matsushita Electric Industrial Co., Ltd. Optical information recording material and method of recording and reproducing information using same material. 4,278,734, Cl. 428-432.000.

Ohtsuki, Kazuhiko: *See*—
Yano, Kazuhiko; and Ohtsuki, Kazuhiko, 4,278,156, Cl. 192-48.910.

Okada, Yasuyuki: *See*—
Yamashita, Yoshiaki; Kambara, Hiroyuki; Kambayashi, Hiroaki; and Okada, Yasuyuki, 4,279,004, Cl. 360-48.000.

Okajima, Hidekazu: *See*—
Toyama, Masamichi; Hirata, Noritsugu; Iwama, Hideto; Okajima, Hidekazu; and Nishimura, Akimasa, 4,278,340, Cl. 354-195.000.

Okamoto, Yoshihiko; Yoshizawa, Tamotu; Ohta, Takahiro; and Murata, Koichi, to Fuji Photo Film Co., Ltd. Cathode-ray tube image recording device. 4,278,347, Cl. 355-68.000.

Okamoto, Yoshiki: *See*—
Kimura, Yoshinori; Sunayama, Masuki; and Okamoto, Yoshiki, 4,278,975, Cl. 343-6.00R.

Okazaki, Seiji: *See*—
Nakazawa, Tetsuo; Sakai, Junji; Morimoto, Syogo; Tanigawa, Takatoshi; Takahashi, Ryoji; and Okazaki, Seiji, 4,278,581, Cl. 260-29.60M.

Oki Electric Industry Co., Ltd.: *See*—
Yamashita, Yoshio; Kunishi, Mitsumasa; and Kawazu, Ryuji, 4,278,754, Cl. 430-323.000.

Okita, Taka-aki: *See*—
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,278,675, Cl. 424-253.000.

Okuda, Kensuke: *See*—
Noguchi, Kazuo; Fujimaki, Hiroto; Tagaya, Kiyoshi; Ajima, Shigetoshi; Takada, Kazutoshi; and Okuda, Kensuke, 4,278,584, Cl. 260-38.000.

Okumura, Masamitsu: *See*—
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Okuyama, Genichiro: *See*—
Tezuka, Keizo; Okuyama, Genichiro; Tokunaga, Kazunobu; and Otani, Yasuhisa, 4,278,657, Cl. 424-63.000.

Okuyama, Takeshi: *See*—
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Olin Corporation: *See*—
Chandalia, Kiran B.; and Barnowski, Henry G., 4,278,770, Cl. 521-99.000.
Dotson, Ronald L., 4,278,527, Cl. 204-272.000.
Kadija, Igor V., 4,278,524, Cl. 204-252.000.
Raynor, Robert J., 4,278,772, Cl. 521-110.000.

Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., to SKF Kugellagerfabriken GmbH. Linear motion bearing. 4,278,305, Cl. 308-6.00C.

Olschewski, Armin; Kunkel, Heinrich; Brandenstein, Manfred; and Schurger, Rainer, to SKF Kugellagerfabriken GmbH. Cage for a rolling bearing. 4,278,307, Cl. 308-201.000.

Olson, Douglas B.: *See*—
Calcote, Hartwell F.; and Olson, Douglas B., 4,278,441, Cl. 23-232.00E.

Olympus Optical Co., Ltd.: *See*—
Mizumoto, Morihide, 4,278,077, Cl. 128-4.000.
Tanaka, Masahiro; and Konoshima, Katunaga, 4,278,101, Cl. 134-167.00C.

Omagari, Masaharu: *See*—
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Omiya, Shoji: *See*—
Fujita, Makoto; Omiya, Shoji; and Hino, Izumi, 4,278,258, Cl. 369-36.000.

Omure, Yukio: *See*—
Hisamoto, Iwao; Enjo, Naonori; Maeda, Chiaki; Esaka, Takasige; Omure, Yukio; Iida, Toshihiko; and Aomi, Hideki, 4,278,552, Cl. 252-3.000.

O'Neal, James E., to Vernon E. Ramsey, Inc. Method of making wire-bound shipping carton. 4,277,878, Cl. 29-432.000.

Ono Pharmaceutical Co.: *See*—
Hayashi, Masaki; Shimoji, Katsuichi; and Arai, Yoshinobu, 4,278,688, Cl. 424-305.000.

Onodera, Bunei. Method of producing nutrient food by fermenting water oats with a *Bacillus subtilis* . 4,278,690, Cl. 426-52.000.

Onoye, Hideo: *See*—
Kitamura, Masatsugu; Onoye, Hideo; and Yamazaki, Masami, 4,279,005, Cl. 360-66.000.

Oofusa, Masaatsu: *See*—
Takahashi, Kihei; Terada, Seiko; and Oofusa, Masaatsu, 4,278,111, Cl. 139-35.000.

Ookubo, Kiyokazu: *See*—
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Oory, Robert F.; and Arndt, Charles J., to Rotec Industries, Inc. Concrete discharge hopper. 4,278,190, Cl. 222-561.000.

Opp, Gerald R. Portable latch for gasoline nozzles. 4,278,116, Cl. 141-392.000.

Optical Coating Laboratory, Inc.: *See*—
Kamerling, Marc A., 4,278,736, Cl. 428-437.000.

Organization Control Services, Inc.: *See*—
Dorrance, William H., 4,278,650, Cl. 423-579.000.

Orson, Theodore, Sr., to Dielectrics Corporation. Spring operated clip. 4,277,864, Cl. 24-327.000.

Ortega, Robert, to Purex Corporation. Three port valve with drain passage. 4,278,109, Cl. 137-625.470.

Ortloff Corporation: *See*—
Campbell, Roy E.; and Wilkinson, John D., 4,278,457, Cl. 62-24.000.

Osborne, Brian T., to Northern Telecom Limited. System for interconnection of multiple insulated wires. 4,278,315, Cl. 339-113.00B.

Osment, David L. Method of constructing simulated vegetation for models. 4,278,481, Cl. 156-61.000.

Ostermayer, Frederick W., Jr., to Bell Telephone Laboratories, Incorporated. Optical inspection of gold surfaces. 4,278,353, Cl. 356-416.000.

Oswald, Leo A.: *See*—
Pistole, Robert G.; Stoll, Walter A.; and Oswald, Leo A., 4,278,490, Cl. 156-425.000.

Oswald, Norman D.; and Mankey, Harry S., to Standard Manufacturing Company, Incorporated. Undercarriage for adverse terrain vehicle. 4,278,140, Cl. 180-6.480.

Oswald, Norman D.; and Mankey, Harry S., to Standard Manufacturing Company, Incorporated. Undercarriage for adverse terrain vehicle. 4,278,141, Cl. 180-6.480.

Otani, Yasuhisa: *See*—
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Otsu, Shuichi: *See*—
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Otsuka, Shigenori: *See*—
Murayama, Tetsuo; Otsuka, Shigenori; and Tajima, Tsunemitsu, 4,278,747, Cl. 430-82.000.

Otsuka, Yasuhiro; Hori, Ryuzo; Matsumoto, Shinichi; Uchida, Kiyoshi; and Furutani, Toshinobu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of activating oxygen concentration cell. 4,278,509, Cl. 204-1.00T.

Outokumpu Oy: *See*—
Lilja, Launo L.; Makitalo, Valto J.; and Koivunen, Timo T., 4,278,494, Cl. 159-16.00A.
von Alfthan, Georg C.; Lukander, Tuula A.; Rautala, Pekka; Sipila, Heikki J.; and Uusitalo, Seppo J., 4,278,885, Cl. 250-370.000.
Owens, Charles A. Fluid pressure indicator switch apparatus. 4,278,856, Cl. 200-82.00R.
Owens-Corning Fiberglas Corporation: *See*—
Ahmad, Abu, 4,278,045, Cl. 118-323.000.
Chrisman, Max G.; Ganzala, Gary W.; and Tiede, Ralph L., 4,278,460, Cl. 65-134.000.
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Pistole, Robert G.; Stoll, Walter A.; and Oswald, Leo A., 4,278,490, Cl. 156-425.000.
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Hartley, David; and Oxford, Alexander W., 4,278,673, Cl. 424-249.000.
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Palacio, Gerard: *See*—
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Pandrol Limited: *See*—
Miller, David W., 4,278,204, Cl. 238-349.000.
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Dixon, Guy E., 4,277,920, Cl. 52-64.000.
Paranjpe, Suresh C.: *See*—
Ganguly, Biswa N.; and Paranjpe, Suresh C., 4,278,999, Cl. 358-213.000.
Pardoe, John A., to United Kingdom Atomic Energy Authority. Forming of materials by extrusion. 4,277,968, Cl. 72-262.000.
Parker, Sidney A., to Lennox Industries, Inc. Twin compressor mechanism in one enclosure. 4,277,955, Cl. 62-510.000.
Parquet, Donald J., to J. I. Case Company. Automatic hydraulic shut-off system. 4,278,011, Cl. 91-445.000.
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Crabb, Elmer R.; and Parr, Alta M., 4,277,964, Cl. 70-484.000.
Partus, Fred P., to Western Electric Company, Inc. Method and apparatus for exhausting optical fiber preform tubes. 4,278,459, Cl. 65-18.000.
Pasqualucci, Carmine: *See*—
Cesti, Pietro; Marsili, Leonardo; and Pasqualucci, Carmine, 4,278,792, Cl. 542-420.000.
Patel, Laxmidas R.: *See*—
Jakabhazy, Stephen Z.; and Patel, Laxmidas R., 4,278,777, Cl. 525-276.000.
Patel, Raman: *See*—
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Harner, Kermit I.; and Patrick, John P., 4,277,940, Cl. 60-243.000.
Paurat, Friedrich-Wilhelm; and Paurat, Roland. Apparatus for advancing a low-height drift through a subterranean structure. 4,278,293, Cl. 299-31.000.
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Pavlova, Maria M.: *See*—
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Payne, Kenneth L.: *See*—
Specht, Donald P.; Payne, Kenneth L.; and Farid, Samir Y., 4,278,751, Cl. 430-281.000.
Pearlstein, Fred; and Evans, Carroll F., to United States of America, Army. Method for removal of sodium carbonate from cyanide plating baths. 4,278,515, Cl. 204-55.00Y.
Pearson, Arthur D.: *See*—
O'Connor, Paul B.; and Pearson, Arthur D., 4,278,458, Cl. 65-2.000.
Pearson, Daniel E.: *See*—
Clifford, James A.; and Pearson, Daniel E., 4,278,988, Cl. 357-51.000.
Peck, David W.: *See*—
Boros, Eugene J.; and Peck, David W., 4,278,807, Cl. 560-134.000.
Pelino, William M., to ACR Electronics, Inc. Method and apparatus for testing survival radios. 4,278,979, Cl. 343-703.000.
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Pelrine, Bruce P., to Mobil Oil Corporation. Method for modifying the shape selectivity of ferrierite. 4,278,564, Cl. 252-450.000.
Pemberton, Ernest H.; Pezzin, John J.; Riggs, Darius O.; and Sorbie, Thomas B., to Owens-Illinois, Inc. Combined plug and air warp neck finish gauge. 4,278,173, Cl. 209-522.000.
Pendleton, Claude A.: *See*—
Coats, Montgomery R.; Pendleton, Turner C., deceased; and Pendleton, Reine H., 4,277,980, Cl. 73-646.000.
Pendleton, Reine H.: *See*—
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Pendleton, Turner C., deceased: *See*—
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Pennington, Chester R., to Timber Products Inspection & Testing Service. Quality control stamping hammer. 4,278,024, Cl. 101-405.000.
Pentapharm AG: *See*—
Svendsen, Lars G., 4,278,762, Cl. 435-13.000.
Pereman, Gordon F.; and Kellar, John D., to PPG Industries, Inc. Glass breaking and separating apparatus and method. 4,278,193, Cl. 225-2.000.
Perethian, Charles M.: *See*—
Cummings, Kenneth W.; and Perethian, Charles M., 4,278,285, Cl. 296-78.100.
Perez, Sergio J. Double ten cigarette dispenser. 4,278,185, Cl. 221-104.000.
Perin, Philippe, to Fiat Trattori S.p.A. Reversible driving station for tractor vehicle. 4,278,144, Cl. 180-329.000.
Persson, Torsten B., to Scan-Web i/s. Method and apparatus for distributing a disintegrated material onto a layer forming surface. 4,278,113, Cl. 141-1.000.
Peter, Donald: *See*—
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,278,658, Cl. 424-65.000.
Peterson, David: *See*—
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Peterson, Gunnar S. S., to Sepson Aktiebolag. Vehicle winch. 4,278,239, Cl. 254-323.000.
Petrides, Christie, to General Electric Company. Temperature-responsive control means. 4,278,873, Cl. 219-501.000.
Petrov, Nikolov Y.; Pavlova, Maria M.; and Bojkov, Ognyan D., to Institute Po Obshta I Neorganichna Chimia. Method for extracting rhenium and tungsten from wastes of rhenium-tungsten alloys. 4,278,641, Cl. 423-49.000.
Petvai, Steve I., to International Business Machines Corporation. Method for cleaning surfaces by ion milling. 4,278,493, Cl. 156-643.000.
Peyrelongue, Jean-Pierre: *See*—
Abramson, Roger; Delisle, Jean-Paul; Elie, Xavier; Salon, Guy; and Peyrelongue, Jean-Pierre, 4,278,499, Cl. 176-37.000.
Pezzin, John J.: *See*—
Pemberton, Ernest H.; Pezzin, John J.; Riggs, Darius O.; and Sorbie, Thomas B., 4,278,173, Cl. 209-522.000.
Pfeiffer, Ronald E., to American Cyanamid Company. Apparatus for melt spinning hollow fibers. 4,278,415, Cl. 425-466.000.
Pfleiderer, Ernst: *See*—
Monsheimer, Rolf; and Pfleiderer, Ernst, 4,278,432, Cl. 8-94.180.
Pfund, Charles E. Secure communication system. 4,279,036, Cl. 455-606.000.
Phelps, Dennis B. Inclined vial holder. 4,278,225, Cl. 248-311.300.
Philip Morris Incorporated: *See*—
Thatcher, Richard E., 4,278,100, Cl. 131-196.000.
Phillippi, Richard M.: *See*—
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Phillips Petroleum Company: *See*—
Irvin, Howard B., 4,278,506, Cl. 203-68.000.
Stacy, Carl J.; and Louthan, Rector P., 4,278,585, Cl. 260-42.150.
Pickett, Teddy L.; Ignacio, Isidro D.; and Rojas, Marco, to United States of America, Agriculture. Machine for planting containerized tree and shrub seedlings. 4,278,035, Cl. 111-2.000.
Pike, Clinton B. Furnace. 4,278,067, Cl. 126-152.00R.
Pilette, Yvan P.: *See*—
Gervay, Joseph E.; and Pilette, Yvan P., 4,278,752, Cl. 430-281.000.
Pinkham, Clinton L., to General Electric Company. Digital thermometer. 4,277,975, Cl. 73-362.0AR.
Pioneer Electronic Corporation: *See*—
Ishida, Kohji, 4,278,944, Cl. 329-103.000.
Pirro, Michael S., Jr. Accumulator conveyor. 4,278,166, Cl. 198-781.000.
Pistole, Robert G.; Stoll, Walter A.; and Oswald, Leo A., to Owens-Corning Fiberglas Corporation. Sleeve for changing diameter of collapsible mandrel. 4,278,490, Cl. 156-425.000.
Piston, Albert O.; and Sherk, Thomas A., to International Business Machines Corporation. Modified conductor array for plasma display panel. 4,278,909, Cl. 313-217.000.
Pitre, Davide: *See*—
Felder, Ernst; and Pitre, Davide, 4,278,808, Cl. 560-183.000.
Platone, Edoardo: *See*—
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Pohland, Hermann W.: *See*—
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Polaroid Corporation: *See*—
Haas, Howard C.; Jasne, Stanley J.; and Moreau, Robert D., 4,278,803, Cl. 556-419.000.
Sachdev, Krishna G., 4,278,814, Cl. 564-160.000.
Poler, Stanley. Intraocular lens with astigmatism correction. 4,277,852, Cl. 3-13.000.
Politechnika Gdanska: *See*—
Doerffer, Jerzy; Madey, Jerzy; Kozlowski, Jan; and Niepiekto, Andrzej, 4,278,040, Cl. 114-170.000.
Pont-A-Mousson S.A.: *See*—
Tosi, Pierre G., 4,278,152, Cl. 188-71.900.
Pope, J. Lee, Jr., to Baxter Travenol Laboratories, Inc. Non air-blocking filter. 4,278,084, Cl. 128-214.00R.

Poppe, Lawrence J.: *See*—
Hathaway, John C.; and Poppe, Lawrence J., 4,278,883, Cl. 250-277.0CH.

Porinchak, Joseph F.: *See*—
Brax, Harri J.; Porinchak, Joseph F.; and Weinberg, Alan S., 4,278,738, Cl. 428-515.000.

Portnoff, Lawrence A. Device for cutting multiple plies of material. 4,277,890, Cl. 30-273.000.

Poss, Glen. Portable sauna. 4,277,855, Cl. 4-524.000.

Post Office, The: *See*—
Huggins, Ernest E. J., 4,278,931, Cl. 324-52.000.
Jackson, Lynden A., 4,278,835, Cl. 174-70.00R.

Postema, Leonard F.: *See*—
Joppe, R. Brent; and Postema, Leonard F., 4,278,247, Cl. 272-56.50R.

Poteet, William C.; Terry, Claude E.; Hamrick, Glen F.; and Walls, Francis G., to Custom Coating, Inc. Apparatus and method for production of polyurethane carpet backing. 4,278,482, Cl. 156-78.000.

Povero, Mario, to Fiat Auto S.p.A. Device for the reduction of the emission of pollutant gases produced by internal combustion, spark-ignition, engines for motor vehicles. 4,277,941, Cl. 60-307.000.

Powell, Justin C., to Texaco Inc. Process for preparing an alkenyl-substituted dicarboxylic acid anhydride. 4,278,604, Cl. 260-346.740.

Powell, Roger A. Solar energy conversion apparatus. 4,278,829, Cl. 136-248.000.

Power, Claude S.: *See*—
Birch, Peter R.; Ling, Kenneth V.; Power, Claude S.; Robinson, Alan J.; Mahoney, Terrence G.; and Las-Laskowski, Stanislaw F., 4,278,532, Cl. 209-19.000.

PPG Industries, Inc.: *See*—
Millhoan, William H., 4,278,171, Cl. 206-451.000.
Pereman, Gordon F.; and Kellar, John D., 4,278,193, Cl. 225-2.000.

Prefco Products, Inc.: *See*—
McCabe, Francis J., 4,277,870, Cl. 29-157.00R.

President and Fellows of Harvard College: *See*—
Hastings, John W.; and Tu, Shiao-Chun, 4,278,761, Cl. 435-8.000.

Price, Ernest H.; and Howard, Douglas C. Demand responsive flow controller. 4,278,110, Cl. 137-805.000.

Priepke, Edward H., to Sperry Corporation. Forage harvester feed roll mounting mechanism. 4,278,210, Cl. 241-222.000.

Princeton Polymer: *See*—
Hudgin, Richard H., 4,278,721, Cl. 428-122.000.

Procter & Gamble Company, The: *See*—
Choy, Clement K., 4,278,571, Cl. 252-558.000.

Prosser, Barbara: *See*—
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Prussin, Samuel B., to AE Development Corporation. Non-pressurized dispensing system. 4,278,206, Cl. 239-327.000.

Prydtz, Ole: *See*—
Nielsen, Jacob A.; and Prydtz, Ole, 4,278,165, Cl. 198-365.000.

Puch, Diethelm: *See*—
Zahner, Peter; and Puch, Diethelm, 4,278,358, Cl. 400-144.200.

Puckette, Charles M., to General Electric Company. Adaptive input circuit. 4,277,978, Cl. 73-632.000.

Pullman Incorporated: *See*—
Knippel, Willis H., 4,278,382, Cl. 414-388.000.

Puls, Walter: *See*—
Stoltefuss, Jurgen; Muller, Lutz; Puls, Walter; and Sitt, Rudiger, 4,278,683, Cl. 424-267.000.

Pundsack, Arnold L.: *See*—
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Purex Corporation: *See*—
Ortega, Robert, 4,278,109, Cl. 137-625.470.

Pyle, Stoddard H.: *See*—
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Quaintance, Peter V. C.: *See*—
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Queen's University at Kingston: *See*—
Romero-Sierra, Cesar; and Webb, John C., 4,278,715, Cl. 428-22.000.

Quick, Leonard M.: *See*—
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Quigg, Paul S.: *See*—
Selbe, Rexford L.; Waropay, Vincent M.; Quigg, Paul S.; and Reily, William S., 4,278,468, Cl. 106-111.000.

Quintel Corporation: *See*—
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R. A. Pearson Company: *See*—
Campbell, Barry, 4,277,932, Cl. 53-497.000.

R. W. Beckett Corporation: *See*—
Cooperrider, Myron T., 4,278,406, Cl. 417-199.00A.

Radelet, Reginald P.: *See*—
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Radiation Dynamics, Inc.: *See*—
Bjellqvist, Bengt; Reitberger, Torbjorn; and Morganstern, Kennard H., 4,278,518, Cl. 204-159.200.

Rady, Robert R., to Indian Head Inc. Conduit cutting apparatus. 4,277,887, Cl. 30-92.000.

Rahman, Michael, to Envirotech Corporation. Humidifier. 4,278,617, Cl. 261-30.000.

Raidel, John E. Suspension system with central elastomer spring. 4,278,271, Cl. 280-687.000.

Rainsfords Metal Products Pty. Ltd.: *See*—
Heath, Robert B., 4,278,043, Cl. 116-28.00R.

Rainwater, Richard C. Toy with staggering motion. 4,277,909, Cl. 46-103.000.

Rakli, Fridtjov B.; and Kelly, Michael J., to Nyegaard & Co. A/S. Process for the preparation of a sterile injectable physiologically acceptable solution of an X-ray contrast agent and solutions of the X-ray contrast agent and a buffer. 4,278,654, Cl. 424-5.000.

Ralston Purina Company: *See*—
Cho, Iue C.; Frederiksen, Christopher W.; and Hoer, Ralph A., 4,278,597, Cl. 260-123.500.

Rambauske, Werner R., to Raytheon Company. Method of manufacturing a foraminous plate. 4,277,966, Cl. 72-148.000.

Rammer, William L.; and Swanson, Paul D., to Badger Northland Inc. Manure transfer pump. 4,278,408, Cl. 417-551.000.

Ranco Incorporated: *See*—
Rossi, Guglielmo, 4,278,855, Cl. 200-67.00D.

Ranken, Paul F.: *See*—
Zaiko, Edward J.; and Ranken, Paul F., 4,278,516, Cl. 204-158.0HA.

Rankin, E. Edward. Apparatus for retrieving drill collars. 4,278,127, Cl. 166-63.000.

Rappas, Alkis S.; Menashi, Jameel; and Douglas, Donald A., to Cabot Corporation. Process for partitioning Mo and W from a mixed $CaMoO_4$-$CaWO_4$ precipitate. 4,278,644, Cl. 423-58.000.

Raschka, Wolfgang: *See*—
Bardenhagen, Dietrich; Raschka, Wolfgang; Glosmann, Josef; and Tolasch, Gerhard, 4,278,385, Cl. 414-419.000.

Rashbaum, Abraham. Lockable automobile trunk extension. 4,278,280, Cl. 292-263.000.

Rasmussen, John F.: *See*—
Schroeder, James E.; and Rasmussen, John F., 4,278,961, Cl. 338-21.000.

Rationator-Maschinenbau GmbH: *See*—
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Rautala, Pekka: *See*—
von Alfthan, Georg C.; Lukander, Tuula A.; Rautala, Pekka; Sipila, Heikki J.; and Uusitalo, Seppo J., 4,278,885, Cl. 250-370.000.

Rawle, Michael D.; and Marshall, Peter E. G., to BL Cars Limited. Hub alignment. 4,278,350, Cl. 356-155.000.

Rawls, Rose M.: *See*—
Anderson, Edward A.; Rawls, Rose M.; and Tull, James A., 4,278,479, Cl. 148-23.000.

Ray, Albert D.: *See*—
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Ray, Gene S. Skier's warning device. 4,278,274, Cl. 280-821.000.

Raynor, Robert J., to Olin Corporation. Semi-flexible foam polymer used in packaging. 4,278,772, Cl. 521-110.000.

Raytheon Company: *See*—
Kaplan, Steven H., 4,277,883, Cl. 29-571.000.
Rambauske, Werner R., 4,277,966, Cl. 72-148.000.

RBU, Reaktor-Brennelment Union GmbH: *See*—
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RCA Corporation: *See*—
Christopher, Todd J., 4,278,992, Cl. 358-13.000.
Fukazawa, Kazuo; and Yamada, Akira, 4,278,846, Cl. 369-128.000.
Hsu, Sheng T., 4,277,884, Cl. 29-571.000.
Kaplan, Leonard A., 4,278,946, Cl. 330-288.000.
Nossen, Edward J., 4,278,977, Cl. 343-6.5LC.
Vilkomerson, David H. R.; and Mezrich, Reuben S., 4,277,979, Cl. 73-633.000.
White, Lawrence K.; Comizzoli, Robert B.; and Schnable, George L., 4,278,508, Cl. 204-1.00T.
Williams, Brown F., 4,278,704, Cl. 427-75.000.

Reagan, William J.: *See*—
Chen, Nai Y.; and Reagan, William J., 4,278,565, Cl. 252-455.00Z.

Reale, Lucio V. Furnace. 4,278,034, Cl. 110-234.000.

Rebentisch, Hugo E.; and Irish, Ellwood, to Unistrut Corporation. Support pedestal assembly for a raised floor system. 4,277,923, Cl. 52-126.000.

Rebentisch, Hugo E.; and Tuday, Thomas, to GTE Products Corporation. Collapsible support structures. 4,278,228, Cl. 248-548.000.

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Debabov, Vladimir G.; Kozlov, Jury I.; Zhdanova, Nelli I.; Khurges, Evgeny M.; Yankovsky, Nikolai K.; Rozinov, Mikhail N.; Shakulov, Rustem S.; Rebentish, Boris A.; Livshits, Vitaly A.; Gusyatiner, Mikhail M.; Mashko, Sergei V.; Moshentseva, Vera N.; Kozyreva, Ljudmila F.; and Arsatiants, Raisa A., 4,278,765, Cl. 435-172.000.

Rebish, Edward J.: *See*—
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Reedrill, Inc.: *See*—
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Reeves, William G.; and Thomas, Douglas C., to Kimberly-Clark Corporation. Bag tampon containing discrete pieces of absorbent. 4,278,088, Cl. 128-270.000.

Regan, Robert J.; and Haugsjaa, Paul O., to GTE Laboratories Incorporated. Instant-on light source. 4,278,916, Cl. 315-92.000.

Regehr, Ulrich. Separator apparatus for evaporator plant. 4,278,495, Cl. 159-27.00A.

Regennitter, Jack; and Ward, Ronald C., to Regennitter, Jack. Multiple station temperature monitor system. 4,278,841, Cl. 179-5.00R.

Regie Nationale des Usines Renault: *See*—
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Regueiro, Jose F., to Deere & Company. Fuel control system for a dual-fueled power unit. 4,278,064, Cl. 123-577.000.

Reid, John H. Conservation of momentum in a barrier oxidation ditch. 4,278,547, Cl. 210-629.000.

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Reino International Corporation: *See*—
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Reinshagen, Hellmuth: *See*—
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Reitberger, Torbjorn: *See*—
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Reli Corporation: *See*—
Woods, Richard E., 4,278,969, Cl. 340-576.000.

Remo Inc.: *See*—
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Rentzea, Costin; Sauter, Hubert; Ammermann, Eberhard; Heilen, Gerd; and Jung, Johann, to BASF Aktiengesellschaft. γ-Azolyl compounds, agents containing them for regulating plant growth, and the manufacture thereof. 4,278,800, Cl. 548-262.000.

Research Corporation: *See*—
Allcock, Harry R.; Allen, Robert W.; and O'Brien, John P., 4,278,660, Cl. 424-78.000.

Research-Cottrell, Inc.: *See*—
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Rhode, James B., to United States of America, Navy. Frequency comparator for electronic clocks. 4,278,898, Cl. 307-528.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See*—
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Richter, Stefan. Spacer for the bricks of a facing brickwork to be placed in front of an inner brickwork. 4,277,927, Cl. 52-749.000.

Ricoh Co., Ltd.: *See*—
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Ridenour, Ralph G. Tubing joint assembly method. 4,277,879, Cl. 29-508.000.

Rider, Ronald E., to Xerox Corporation. Adapter for raster output scanning printer. 4,279,002, Cl. 358-257.000.

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Riemer, Dietrich E.; and Corwin, Rudolph E., to Boeing Company, The. Process for fabricating solar cells and the product produced thereby. 4,278,831, Cl. 136-256.000.

Riggs, Darius O.: *See*—
Pemberton, Ernest H.; Pezzin, John J.; Riggs, Darius O.; and Sorbie, Thomas B., 4,278,173, Cl. 209-522.000.

Riley, Richard E.; and Turner, Bradley D., to Spectrol Electronics Corp. Cermet resistor and method of making same. 4,278,725, Cl. 428-208.000.

Rinnai Kabushiki Kaisha: *See*—
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Ritchie, Ronald J.; and Andrews, Daniel M., to Burroughs Corporation. IC Package with heat sink and minimal cross-sectional area. 4,278,991, Cl. 357-81.000.

Rittscher, Dieter: *See*—
Baatz, Heinrich; and Rittscher, Dieter, 4,278,892, Cl. 250-506.000.

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Robbins, Robert J.: *See*—
See, Gary G.; and Robbins, Robert J., 4,279,021, Cl. 364-900.000.

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Berner, Walter, 4,278,058, Cl. 123-387.000.
Werner, Peter; and Drews, Ulrich, 4,278,061, Cl. 123-483.000.

Robert Bosch Verpackungsmaschinen GmbH: *See*—
Buchner, Norbert; and Liede, Dieter, 4,278,716, Cl. 428-35.000.

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Marzocchi, Alfred; Roberts, Michael C.; and Bolen, Charles E., 4,278,470, Cl. 106-281.00R.

Roberts, Wayne R.: *See*—
Mayo, George L., 4,277,998, Cl. 83-404.100.

Robertshaw Controls Company: *See*—
Bechtel, Jon H.; and Geary, Frederick J., 4,278,419, Cl. 431-24.000.

Robertson, George H.: *See*—
Wheeler, Ian R.; Robertson, George H.; and McGregor, David, 4,278,601, Cl. 260-314.500.

Robinson, Alan J.: *See*—
Birch, Peter R.; Ling, Kenneth V.; Power, Claude S.; Robinson, Alan J.; Mahoney, Terrence G.; and Las-Laskowski, Stanislaw F., 4,278,532, Cl. 209-19.000.

Robinson, Ralph L., Jr.: *See*—
Edelman, Brian S.; and Robinson, Ralph L., Jr., 4,279,015, Cl. 364-200.000.

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Jakobs, Ewald; and Lang, Gernot, 4,278,369, Cl. 407-113.000.

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Grebe, Karl, 4,278,922, Cl. 318-264.000.

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Godejahn, Gordon C., Jr., 4,277,881, Cl. 29-571.000.
Kostello, Edward M.; and Schulte, Kenneth L., Jr., 4,277,985, Cl. 74-713.000.

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Roesler, Frank C., deceased (by Roesler, Johanna, executrix), to Imperial Chemical Industries Limited. Treatment of a liquid by circulation and gas contacting. 4,278,546, Cl. 210-626.000.

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Moench, Theodor P.; and Hanstein, Friedrich, 4,278,723, Cl. 428-192.000.
Monsheimer, Rolf; and Pfleiderer, Ernst, 4,278,432, Cl. 8-94.180.

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Goldman, Theodore D., 4,278,576, Cl. 260-23.0AR.

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Pickett, Teddy L.; Ignacio, Isidro D.; and Rojas, Marco, 4,278,035, Cl. 111-2.000.

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Hug, Niklaus, 4,278,456, Cl. 55-429.000.

Rosen, Julius S., to American Optical Corporation. Quick-release clamp for microtomes. 4,278,263, Cl. 279-1.00R.

Rosenfeld, Jerold C., to Hooker Chemicals & Plastics Corp. Polyester composition, process therefor and molded articles therefrom. 4,278,785, Cl. 528-176.000.

Rossell, John B.: *See*—
Barents, Roelof H.; and Rossell, John B., 4,278,700, Cl. 426-660.000.

Rossi, Guglielmo, to Ranco Incorporated. Snap action switch. 4,278,855, Cl. 200-67.00D.

Rotec Industries, Inc.: *See*—
Oory, Robert F.; and Arndt, Charles J., 4,278,190, Cl. 222-561.000.

Roth, Helmut; and Farrell, Terry J., to Chrysler Corporation. Temperature controlled viscous fan drive. 4,278,159, Cl. 192-58.00B.

Roth, Johann, to Braun Aktiengesellschaft. Camera with action indicator. 4,278,333, Cl. 352-170.000.

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Botta, Artur; Rother, Heinz-Joachim; and Teichmann, Gunther, 4,278,791, Cl. 542-412.000.

Rottigni, Claudio; and Cardini, Giuliano, to Euteco Impianti S.p.A. Process for preparing citric acid by fermentation of carbohydrates. 4,278,764, Cl. 435-144.000.

Roubinet, Pierre; and Goupy, Marcel, to Regie Nationale des Usines Renault. Elastic guard braces for attaching bumpers to automobiles. 4,278,282, Cl. 293-132.000.

Roussel Uclaf: *See*—
Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,278,677, Cl. 424-263.000.

Rowe, Harrison E.: *See*—
Mack, Iris M.; Rowe, Harrison E.; and Schmidt, Ronald V., 4,278,321, Cl. 350-96.120.

Rowland, Keith L.: *See*—
Cameron, Larry E.; Cook, Kenneth J.; Neff, Vance E.; and Rowland, Keith L., 4,279,013, Cl. 364-105.000.

Rowley, David S.; Aumann, James T.; and Waldes, Lothar H., to Christensen, Inc. Composite heavy metal drill collar. 4,278,138, Cl. 175-320.000.

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Debabov, Vladimir G.; Kozlov, Jury I.; Zhdanova, Nelli I.; Khurges, Evgeny M.; Yankovsky, Nikolai K.; Rozinov, Mikhail N.; Shakulov, Rustem S.; Rebentish, Boris A.; Livshits, Vitaly A.; Gusyatiner, Mikhail M.; Mashko, Sergei V.; Moshentseva, Vera N.; Kozyreva, Ljudmila F.; and Arsatiants, Raisa A., 4,278,765, Cl. 435-172.000.

Ruberg, Richardt E., to Zyliss Zysset AG. Kitchen appliance for storing perishable goods. 4,278,114, Cl. 141-65.000.

Rubruck, Manfred, to Siemens Aktiengesellschaft. Control arrangement for a roll carrier. 4,278,213, Cl. 242-75.100.

Rudd, Wallace C.; and Udall, Humfrey N., to Thermatool Corp. Methods and apparatus for heating metal parts with magnetically driven travelling electric arc. 4,278,868, Cl. 219-123.000.

Rudisill, John A., Jr.: *See*—
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Ruoff, Carl F., Jr., to Bendix Corporation, The. Method and apparatus for generating position or path control programs using force feedback. 4,278,920, Cl. 318-2.000.
Rushforth, Harold E. Golf tee awl and awl retaining sheath. 4,277,892, Cl. 30-368.000.
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Ryan, Edward W.: *See*—
Johnston, Everett A.; and Ryan, Edward W., 4,278,220, Cl. 244-110.00B.
Ryan, Thomas L.; and Kalisz, George T., to Rykal Solar Corporation. Forced air solar heating system. 4,278,072, Cl. 126-429.000.
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S K M, Societe Anonyme: *See*—
Binoche, Michel, 4,278,205, Cl. 239-75.000.
S. K. Wellman Corp., The: *See*—
Frichette, Ross S.; Grambo, Ronald E.; Biggs, Robert W.; and Healy, Thomas A., deceased, 4,278,162, Cl. 192-107.00C.
Sachdev, Krishna G., to Polaroid Corporation. Preparation of 2-methylene-1,3-propanediamide by a fluoride anion-initiated β-elimination reaction. 4,278,814, Cl. 564-160.000.
Sackett, Willard A.: *See*—
Eis, Frederick G.; Bonney, Oren V.; and Sackett, Willard A., 4,278,541, Cl. 210-112.000.
Sagami Chemical Research Center: *See*—
Tsuchihashi, Genichi; Ogura, Katsuyuki; and Mitamura, Shuichi, 4,278,802, Cl. 549-72.000.
Sahay, Ravi B., to Xerox Corporation. Recirculating duplex documents copier. 4,278,344, Cl. 355-14.0SH.
Saijo, Takao: *See*—
Toriumi, Shiro; Saijo, Takao; Endo, Hiroshi; Kamimura, Kuniaki; and Saito, Takanori, 4,278,346, Cl. 355-45.000.
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Saito, Takanori: *See*—
Toriumi, Shiro; Saijo, Takao; Endo, Hiroshi; Kamimura, Kuniaki; and Saito, Takanori, 4,278,346, Cl. 355-45.000.
Saizi, Mituhiro: *See*—
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Nakazawa, Tetsuo; Sakai, Junji; Morimoto, Syogo; Tanigawa, Takatoshi; Takahashi, Ryoji; and Okazaki, Seiji, 4,278,581, Cl. 260-29.60M.
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Ido, Kazuo; Sogo, Yukio; Taneda, Kozo; Sakai, Katzuji; and Sato, Yoichiro, 4,278,452, Cl. 55-261.000.
Sakasai, Masao: *See*—
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Salbeck, Gerhard; Schonowsky, Hubert; Horlein, Gerhard; Langeluddeke, Peter; and Kocher, Helmut, to Hoechst Aktiengesellschaft. Herbicidal agents. 4,278,461, Cl. 71-87.000.
Saleck, Wilhelm; Wolff, Erich; and Muller, Erwin, to AGFA-Gevaert A.G. Process of preparing photographic silver halide emulsion. 4,278,759, Cl. 430-627.000.
Salon, Guy: *See*—
Abramson, Roger; Delisle, Jean-Paul; Elie, Xavier; Salon, Guy; and Peyrelongue, Jean-Pierre, 4,278,499, Cl. 176-37.000.
Saltz, Ivan K.: *See*—
Hodgins, Bruce J.; Saltz, Ivan K.; and Ginsberg, Guenter, 4,278,086, Cl. 128-224.000.
Salviati, Antonio, to Salviati Impianti S.p.A. Method and installation for producing bricks. 4,278,631, Cl. 264-64.000.
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Salviati, Antonio, 4,278,631, Cl. 264-64.000.
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Sandberg, Nils A., to Ingenjorsfirman N. A. Sandberg Industrikorstruktioner AB; and Trelleborg AB. Control system for controlling a plant including a mobile suction device for sucking suspendible material. 4,278,365, Cl. 406-30.000.
Sander, Lars, to Asea Aktiebolag. Fiber optical temperature sensors. 4,278,349, Cl. 356-44.000.
Sando Iron Works Co. Ltd.: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,277,860, Cl. 8-151.000.
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Sandoz Ltd.: *See*—
Egger, Helmut; and Reinshagen, Hellmuth, 4,278,674, Cl. 424-250.000.
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Nagai, Sumiyoshi; and Izumi, Tokio, 4,278,656, Cl. 424-62.000.
Santhanam, Chakra J.; and Nadkarni, Ravindra M., to Arthur D. Little, Inc. Method for removing heavy metals from aqueous liquids. 4,278,539, Cl. 210-724.000.
Sanyo Electric Co., Ltd.: *See*—
Kishi, Hiroyasu, 4,278,901, Cl. 307-350.000.
Sapino, Chester: *See*—
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,278,600, Cl. 260-239.100.
Sarnecki, Mildred A. Waterproof backed towel. 4,278,719, Cl. 428-78.000.
Sasaki, Jun: *See*—
Mukunoki, Yasuo; Yoneyama, Masakazu; Yamaguchi, Jiro; Naito, Hideki; and Sasaki, Jun, 4,278,757, Cl. 430-512.000.
Sasaki, Toshiharu; Katakabe, Noboru; and Yokoyama, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Magnetic tape recording and/or reproducing apparatus. 4,279,006, Cl. 360-90.000.
Sato, Chikara: *See*—
Masuda, Eiji; Sato, Chikara; and Suzuki, Yasoji, 4,278,943, Cl. 328-127.000.
Sato, Masanori; Niiro, Yasuhiko; and Wakabayashi, Hiroharu, to Kokusai Denshin Denwa Co., Ltd. Monitoring system for optical transmission line repeaters. 4,278,850, Cl. 179-175.31R.
Sato, Reiko: *See*—
Hamazaki, Yasuhiko; Seri, Kenji; Ishiyama, Nobuo; Yamamoto, Toshiyuki; Sakasai, Masao; and Sato, Reiko, 4,278,678, Cl. 424-263.000.
Sato, Ryuichi: *See*—
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; and Yamamoto, Yasushi, 4,278,666, Cl. 424-184.000.
Sato, Yoichiro: *See*—
Ido, Kazuo; Sogo, Yukio; Taneda, Kozo; Sakai, Katzuji; and Sato, Yoichiro, 4,278,452, Cl. 55-261.000.
Satter, Abdus; Widmyer, Richard H.; Shum, Yick M.; and Howard, Curtis E., to Texaco Inc. Petroleum recovery chemical retention prediction technique. 4,278,128, Cl. 166-250.000.
Sauer, Philip H.: *See*—
Huck, Charles M.; Studer, John E.; and Sauer, Philip H., 4,278,089, Cl. 128-278.000.
Sauka, Klaus; and Muschelknautz, Horst, deceased (by Muschelknautz, Ingeborg), to Voith Turbo GmbH & Co. K.G. Braking system utilizing both a dynamic and a mechanical brake. 4,278,298, Cl. 303-3.000.
Saunier, Bernard: *See*—
Derreumaux, Antoine; and Saunier, Bernard, 4,278,507, Cl. 204-1.00T.
Sauter, Hubert: *See*—
Rentzea, Costin; Sauter, Hubert; Ammermann, Eberhard; Heilen, Gerd; and Jung, Johann, 4,278,800, Cl. 548-262.000.
Savin Corporation: *See*—
Landa, Benzion, 4,278,884, Cl. 250-315.200.
Savoca, Paul F.; and Lindner, Melvin. Thermostatically controlled heater. 4,278,876, Cl. 219-535.000.
Sazegar, Frank. Ski and pole carrying bracket. 4,278,192, Cl. 224-315.000.
Scan-Web i/s: *See*—
Persson, Torsten B., 4,278,113, Cl. 141-1.000.
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Schafer, Heinz: *See*—
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Scheicher, Hans. Method for the preparation of implants, and implants. 4,278,630, Cl. 264-60.000.
Scheinbaum, Marc C.; and Winburn, Anne L., to Container Corporation of America. Carry-out tray. 4,278,197, Cl. 229-30.000.
Scheingold, William S.; and Youngfleish, Frank C., to AMP Incorporated. Surface to surface connector. 4,278,311, Cl. 339-17.0CF.
Schempp, Heinrich: *See*—
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, 4,278,613, Cl. 260-465.00D.
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Burba, Christian; Volland, Hans-Guenter; and Esper, Norbert, 4,278,713, Cl. 427-388.200.
Scherrer, Norbert, to Societe Europeenne de Propulsion. Method for lifting an immersed device and returning it into position, and for carrying out said method. 4,278,362, Cl. 405-191.000.
Schiff, Robert D. Personal safety restraint assembly for vehicle occupants. 4,278,273, Cl. 280-802.000.
Schiller, Wilfried: *See*—
Hugo, Rolf; and Schiller, Wilfried, 4,278,919, Cl. 315-393.000.
Schindel, Hugo, to Rationator-Maschinenbau GmbH. Gripping head for screwing on a threaded closure. 4,277,929, Cl. 53-331.500.
Schindler, Rudolf A.: *See*—
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Schlegel, Earl S.: *See*—
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Bartko, John; and Schlegel, Earl S., 4,278,476, Cl. 148-1.500.
Schlegel GmbH: *See*—
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Schlossberg, Howard R.: *See*—
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Schlosser, Ewald: *See*—
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Schlumberger Technology Corporation: *See*—
Bonnet, Jean-Loup; and Fierfort, Claude, 4,278,942, Cl. 324-347.000.

Schmidt, Klaus P.: *See*—
Hill, Bernhard; Schmidt, Klaus P.; and Graf, Gerhard, 4,278,981, Cl. 346-108.000.
Schmidt-Kufeke, Klaus-Peter; and Feld, Gerhard. Arrangement for effecting the superfine perforation of film-like sheeting with the aid of high-voltage pulses. 4,278,871, Cl. 219-384.000.
Schmidt, Ronald V.: *See*—
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Schmidt, Uwe; and Schneider, Dieter, to Alpine Aktiengesellschaft. Apparatus for separating heavy solids and light solids from a mixture thereof. 4,278,537, Cl. 209-469.000.
Schmitt, Frederick L.: *See*—
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,278,098, Cl. 131-276.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,278,569, Cl. 252-522.00R.
Schmolzer, Gerhard; Daimer, Wolfgang; and Verdino, Heiner, to Vianova Kunstharz, A.G. Cathodically depositable paint binders and process for producing same. 4,278,580, Cl. 260-29.2EP.
Schnable, George L.: *See*—
White, Lawrence K.; Comizzoli, Robert B.; and Schnable, George L., 4,278,508, Cl. 204-1.00T.
Schneider, Abraham; and Myers, Harry K., Jr., to Suntech, Inc. Hydrogenolysis of 2,5-norbornadiene saturated endo-endo hexacyclic dimer. 4,278,823, Cl. 585-22.000.
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Schmidt, Uwe; and Schneider, Dieter, 4,278,537, Cl. 209-469.000.
Schneider, Klaus-Jurgen: *See*—
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Scholten, Stephen C.: *See*—
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Salbeck, Gerhard; Schonowsky, Hubert; Horlein, Gerhard; Langeluddeke, Peter; and Kocher, Helmut, 4,278,461, Cl. 71-87.000.
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Schrader, Edward H. Method and apparatus for corrugating paperboard. 4,278,486, Cl. 156-231.000.
Schramm, Konrad: *See*—
Uhlmann, Gert; Schramm, Konrad; and Kohler, Georg, 4,278,498, Cl. 176-36.00R.
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Schrencongost, Ray B., to Marmon Company. Selective keyer biasing to enhance percussion effect. 4,278,001, Cl. 84-1.260.
Schrenk, Hartmut, to Siemens Aktiengesellschaft. Word-by-word electrically reprogrammable nonvolatile memory. 4,279,024, Cl. 365-203.000.
Schrinner, Elmar: *See*—
Durckheimer, Walter; Bormann, Dieter; Ehlers, Eberhard; Schrinner, Elmar; and Heymes, Rene, 4,278,793, Cl. 544-27.000.
Schroder, Ernst; and Wermuth, Jurgen, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit for the generation of a control variable for the control of the transfer constant of electronically actuable amplifying and attenuating members. 4,278,945, Cl. 330-278.000.
Schroeder, James E.; and Rasmussen, John F., to McGraw-Edison Company. Insulating coating for surge arrester valve element. 4,278,961, Cl. 338-21.000.
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Ashby, Bruce A.; and Schroeter, Siegfried H., 4,278,804, Cl. 556-436.000.
Schuch, Joseph N., to Under Sea Industries, Inc. Diving snorkel. 4,278,080, Cl. 128-201.110.
Schuhmann, Werner P.: *See*—
Lubitz, Karl; Drew, Jeffrey M.; and Schuhmann, Werner P., 4,277,977, Cl. 73-587.000.
Schulte, Kenneth L., Jr.: *See*—
Kostello, Edward M.; and Schulte, Kenneth L., Jr., 4,277,985, Cl. 74-713.000.
Schulz, Joachim, to Dr. Ing Rudolf Hell G.m.b.H. Picture contrast-increasing arrangements. 4,279,003, Cl. 358-280.000.
Schulz, Johann G.: *See*—
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Schurger, Rainer: *See*—
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Schwartz, Herbert S., to Croscill Curtain Co. Inc. Bow construction. 4,278,714, Cl. 428-4.000.
Schwartz, Robert. Relator assembly. 4,278,426, Cl. 433-54.000.
Schwarzmann, Matthias: *See*—
Mross, Wolf D.; Titzenthaler, Eckart; Koopmann, Juergen; Schwarzmann, Matthias; and Vogt, Volker, 4,278,562, Cl. 252-430.000.
Science Applications, Inc.: *See*—
Toy, Madeline S.; Stringham, Roger S.; and Fogg, Lawrence C., 4,278,703, Cl. 427-54.100.
Scott Paper Company: *See*—
Homestead, Peter W., 4,278,287, Cl. 297-59.000.
Scribner, Albert W. Capacitance control system for pneumatic punch press feeders. 4,277,997, Cl. 83-225.000.
Scudder, Monty. Machine for manufacturing wreaths. 4,277,885, Cl. 29-780.000.
Seaman, Florence. Travel pillow. 4,277,859, Cl. 5-434.000.
Security Plastics, Inc.: *See*—
Luedtke, Warren J., 4,278,187, Cl. 222-153.000.
See, Gary G.; and Robbins, Robert J., to Telxon Corporation. Portable data entry apparatus including plural selectable functional configurations. 4,279,021, Cl. 364-900.000.
Segard, Yves-Andre, to Etablissements Sim S.A. Apparatus for grinding articles with two rotating grinding discs. 4,277,914, Cl. 51-112.000.
Seguela, Marie-Claude J.; Betton, Rene F.; and Gonzalez, Claude A. Device for transferring an invalid from his invalid chair into a motor vehicle and conversely. 4,278,387, Cl. 414-462.000.
Seidel, Harold: *See*—
Nicollian, Edward H.; Seidel, Harold; and Smith, George E., 4,278,947, Cl. 331-1.00R.
Seidler, Helmut; and Gehrke, Gunter, to Bayer Aktiengesellschaft. Process for the preparation of dimethoxyanthraquinones. 4,278,607, Cl. 260-383.000.
Seilly, Alec H., to Lucas Industries Limited. Electromagnetic devices. 4,278,904, Cl. 310-27.000.
Seitz-Werke GmbH: *See*—
Ahlers, Egon, 4,277,928, Cl. 53-67.000.
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Kajimura, Mutsuhiko; and Maeda, Tetsuji, 4,278,627, Cl. 264-45.400.
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Freedman, Robert, 4,278,941, Cl. 324-341.000.
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Shim, Kyung-sup, to Stauffer Chemical Company. Process for preparing phenols and thiophenols. 4,278,816, Cl. 568-67.000.
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Nagano, Masashi, 4,278,265, Cl. 280-160.100.
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Kametaka, Norio; Marumo, Kuniomi; and Nozawa, Tutomu, 4,278,820, Cl. 568-678.000.
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Shriver, Joe E., to Sperry Corporation. Tensioning mechanism for forage harvester feed roll assembly. 4,278,211, Cl. 241-222.000.
Shum, Yick M.: *See*—
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Siccardi, Frank J. Heating and ventilating system for poultry houses. 4,278,423, Cl. 432-222.000.
Sidhu, Jasbir; Simons, Michael J.; and Mijovic, Miroslav V., to Eastman Kodak Company. Absorbed hydrazide nucleating agents and photographic elements containing such agents. 4,278,748, Cl. 430-212.000.
Siegel, Alan G. Musical instrument stand. 4,278,222, Cl. 248-121.000.
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Immler, Josef, 4,278,937, Cl. 324-86.000.
Kullmann, Dieter, 4,278,906, Cl. 310-52.000.
Landgraf, Hermann; and Wohlgemuth, Juergen, 4,278,907, Cl. 310-191.000.
Lubitz, Karl; Drew, Jeffrey M.; and Schuhmann, Werner P., 4,277,977, Cl. 73-587.000.
Mahlein, Hans F., 4,278,322, Cl. 350-96.180.
Rubruck, Manfred, 4,278,213, Cl. 242-75.100.
Schrenk, Hartmut, 4,279,024, Cl. 365-203.000.
Straihammer, Reinhard; Klose, Hans J.; and Schuss, Werner, 4,278,428, Cl. 433-105.000.
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Sigmund, Paul W.; and Butwell, Kenneth F., to Union Carbide Corporation. Vapor-liquid contacting system. 4,278,621, Cl. 261-114.00R.
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del Picchia, Walter; Martins, Wagner W.; Silveira, Decio G.; and del Picchia Sergio, 4,279,008, Cl. 361-194.000.
Silver, Donna H.: *See*—
Simhoni, Orit; and Silver, Donna H., 4,278,079, Cl. 128-149.000.
Silvestri, George J., Jr.; and Kesavan, Krishnamurthy, to Westinghouse Electric Corp. Method and apparatus for supplying steam to a turbine. 4,277,943, Cl. 60-646.000.
Silvestri, George J., Jr., to Westinghouse Electric Corp. Method and apparatus for regeneratively superheating auxiliary steam. 4,277,944, Cl. 60-670.000.
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Simhoni, Orit; and Silver, Donna H. Negative heel protector cushion. 4,278,079, Cl. 128-149.000.
Siminoff, Roger H. Fast-wind tuning machine for stringed musical instrument. 4,278,002, Cl. 84-304.000.
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Simmons, George H., to Bell Telephone Laboratories, Incorporated. Circuit for eliminating spurious pulses in a dial pulse stream. 4,278,842, Cl. 179-16.0EA.
Simon, Joseph A. Method of cold forming tubes with interior thicker wall sections. 4,277,969, Cl. 72-266.000.
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Sitt, Rudiger: *See*—
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Horowitz, Charles, 4,278,226, Cl. 248-314.000.
Smith, Donald C.; and Hoffman, Jack D., to Eagle-Picher Industries, Inc. Quick cure catalyst for polyester molding compositions. 4,278,558, Cl. 252-186.000.
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Nicollian, Edward H.; Seidel, Harold; and Smith, George E., 4,278,947, Cl. 331-1.00R.
Smith, Harlan B. Cable marking device. 4,277,873, Cl. 29-235.000.
Smith, James H.: *See*—
Wallischeck, Karl H.; and Smith, James H., 4,278,010, Cl. 91-420.000.
Smith Kline - RIT: *See*—
Lobmann, Michele; and Florent, Gerard, 4,278,662, Cl. 424-89.000.
Smith, Nicholas K., to Bell Telephone Laboratories, Incorporated. Channel bank loop-around test arrangement and method. 4,279,032, Cl. 370-15.000.
Smith, Peter W. Male ended valve. 4,278,235, Cl. 251-144.000.
Smith, Richard H.: *See*—
Huber, Doyle W.; Smith, Richard H.; and Strong, Robert L., 4,277,868, Cl. 29-33.00Q.
Smith, Stuart B.: *See*—
Montgomery, Robert L.; and Smith, Stuart B., 4,278,628, Cl. 264-45.500.
Smith, Walter C.: *See*—
Hibbs, Joseph E.; Chalmers, Gerald W.; Durrell, Robert L.; and Smith, Walter C., 4,278,026, Cl. 102-254.000.
Smith, William E., to Stryker Corporation. Lavage handpiece. 4,278,078, Cl. 128-66.000.
Smith, William G.; and Yuhash, Ladd, to United States of America, Army. Separate loading ammunition automatic cannon. 4,278,008, Cl. 89-156.000.
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Dunn, George L., 4,278,670, Cl. 424-246.000.
Snow Brand Milk Products Co., Ltd.: *See*—
Ido, Kazuo; Sogo, Yukio; Taneda, Kozo; Sakai, Katzuji; and Sato, Yoichiro, 4,278,452, Cl. 55-261.000.
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Vasseur, Gilbert M., 4,278,267, Cl. 280-406.00R.
Societe Anonyme Francaise du Ferodo: *See*—
Bacher, Michel, 4,278,300, Cl. 303-115.000.
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Magnolato, Daniele, 4,278,696, Cl. 426-422.000.

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Tsuda, Yoshitaka; Sodeyama, Kaoru; and Tsunada, Naomasa, 4,278,299, Cl. 303-6.00C.
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Sondermann, Thomas, to RBU, Reaktor-Brennelment Union GmbH. Method for manufacturing gadolinium-containing nuclear fuels. 4,278,560, Cl. 252-301.10R.
Song, Chang J. Jewelry clasp and method. 4,277,866, Cl. 24-238.000.
Song, John, to American Cyanamid Company. Bis(sulfonamide) stabilizers for synthetic polymers. 4,278,577, Cl. 260-23.00H.
Sontheimer, Carl G. Rotary slicing tool for making neat, complete slices in a food processor. 4,277,995, Cl. 83-150.000.
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Sorbie, Thomas B.: *See*—
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Spear, Gilmore M., to Gleason Works, The. Cutting tool. 4,278,370, Cl. 407-115.000.
Spears, Leslie G. Elongate garment for women and girls. 4,277,849, Cl. 2-144.000.
Specht, Donald P.; Payne, Kenneth L.; and Farid, Samir Y., to Eastman Kodak Company. Photopolymerization co-initiator compositions comprising amine-substituted ketocoumarins and certain acetic acid derivative activators. 4,278,751, Cl. 430-281.000.
Spector, George: *See*—
Garcia, Juan M.; and Spector, George, 4,278,257, Cl. 273-411.000.
Spectrol Electronics Corp.: *See*—
Riley, Richard E.; and Turner, Bradley D., 4,278,725, Cl. 428-208.000.
Spengler, Ernst M., to Stanztechnik GmbH R & S. Force application apparatus, especially for severing materials. 4,277,996, Cl. 83-171.00Q.
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Grey, Donald M., 4,278,379, Cl. 414-44.000.
McMahon, Donald H.; and Soref, Richard A., 4,278,327, Cl. 350-347.00V.
Priepke, Edward H., 4,278,210, Cl. 241-222.000.
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Cros, Pierre, 4,278,895, Cl. 290-52.000.
Spinner, Georg; and Treczka, Leo, to Spinner GmbH Elektrotechnische Fabrik. HF-Attenuator. 4,278,956, Cl. 333-81.00A.
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Bos, Bernardus W.; and Wijbenga, Harke M., 4,279,017, Cl. 364-484.000.
Staat, Karl-Hans; Zacharias, Theodor; and Terdenge, Bernhard, to Kocks Technik GmbH & Co. Push benches. 4,277,967, Cl. 72-224.000.
Stacy, Carl J.; and Louthan, Rector P., to Phillips Petroleum Company. Rubber compositions. 4,278,585, Cl. 260-42.150.
Stagg, Brian H.: *See*—
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Standard Oil Company (Indiana): *See*—
Caspari, Gunter; and Boone, David E., 4,278,781, Cl. 526-150.000.
Hensley, Albert L., Jr.; Quick, Leonard M.; and Hopkins, P. Donald, 4,278,566, Cl. 252-465.000.
Worrell, J. Robert, 4,277,875, Cl. 29-253.000.
Zeitlin, Martin A.; and Harper, Jon J., 4,278,503, Cl. 203-28.000.
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Byrd, Geoffrey C.; and Stanier, Colin, 4,278,523, Cl. 204-252.000.
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Coll-Palagos, Miguel, 4,278,739, Cl. 428-623.000.
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Steinke, Alexander, to Kraftwerk Union Aktiengesellschaft. Spring element for holding down nuclear reactor fuel assembly. 4,278,501, Cl. 176-78.000.
Steinke, Mark H., to Lyon Metal Products, Incorporated. Channel interconnection apparatus. 4,278,361, Cl. 403-189.000.
Stephan, Hans-Werner: *See*—
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Stephenson, George M.; and Begin, David E., to Stephenson, George M. Remote delivery nozzle assembly for pressurized container. 4,278,188, Cl. 222-182.000.
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Stickler, David B.; Von Rosenberg, Charles W., Jr.; and Gannon, Richard E., to Avco Everett Research Laboratory, Inc. Subsonic-velocity entrained-bed gasification of coal. 4,278,445, Cl. 48-197.00R.
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Stobbs, William, to GTE Laboratories Incorporated. Monolithic integrated circuit structure incorporating Schottky contact diode bridge rectifier. 4,278,985, Cl. 357-15.000.
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Stoll, Walter A.: *See*—
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Stoltefuss, Jurgen; Muller, Lutz; Puls, Walter; and Sitt, Rudiger, to Bayer Aktiengesellschaft. Saccharase inhibiting 3,4,5-trihydroxypiperidine derivatives. 4,278,683, Cl. 424-267.000.
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Streczyn, Michael; and Loughlin, Joseph B. Alarm circuit for detecting overheated condition. 4,278,970, Cl. 340-599.000.
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Stringham, Roger S.: *See*—
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Strohmaier, Ernst: *See*—
Lingenhole, Bernhard; and Strohmaier, Ernst, 4,278,427, Cl. 433-100.000.
Strong, Robert L.: *See*—
Huber, Doyle W.; Smith, Richard H.; and Strong, Robert L., 4,277,868, Cl. 29-33.00Q.
Strongwater, Murray. Glove and method for making same. 4,277,850, Cl. 2-163.000.
Strowik, Willibald: *See*—
Werner, Paul; and Strowik, Willibald, 4,278,290, Cl. 297-362.000.
Stryker Corporation: *See*—
Smith, William E., 4,278,078, Cl. 128-66.000.
Stubenrauch, James B. Adjustable socket wrench. 4,277,991, Cl. 81-163.000.
Studer, John E.: *See*—
Huck, Charles M.; Studer, John E.; and Sauer, Philip H., 4,278,089, Cl. 128-278.000.
Stuller, John A.: *See*—
Netravali, Arun N.; Robbins, John D.; and Stuller, John A., 4,278,996, Cl. 358-136.000.
Sturm, Elmar; Schempp, Heinrich; and Martin, Henry, to Ciba-Geigy Corporation. Sulfur-containing oxime compounds, processes for producing them, and their use for protecting cultivated plants. 4,278,613, Cl. 260-465.00D.
Sturm, Karl G.: *See*—
Gebauer, Peter; and Sturm, Karl G., 4,278,769, Cl. 521-90.000.
Su, Sophia R.: *See*—
Natansohn, Samuel; and Su, Sophia R., 4,278,643, Cl. 423-54.000.
Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: *See*—
Martin, Hans, 4,278,158, Cl. 192-58.00B.
Sugawara, Ryozo: *See*—
Honda, Kiyoshi; Kuriyama, Kazuya; Murakami, Shigeru; Sugawara, Ryozo; and Nakamura, Chiaki, 4,278,728, Cl. 428-313.000.
Sugihara, Kunihiko: *See*—
Nakamura, Ken; Sugihara, Kunihiko; and Ishizawa, Shizuo, 4,278,063, Cl. 123-568.000.
Sugiura, Susumu: *See*—
Fukuda, Tadaji; and Sugiura, Susumu, 4,279,000, Cl. 358-213.000.
Suh, Nam P., to Massachusetts Institute of Technology. Method for forming metal, ceramic or polymer compositions. 4,278,622, Cl. 264-11.000.
Sullivan, Richard W.; and Warwick, Robert N., to Ball Corporation. Method of applying water soluble internal coating to hot cans. 4,278,709, Cl. 427-233.000.
Sullivan, Richard W., to Ball Corporation. Apparatus and method for the lubrication of cans. 4,278,711, Cl. 427-284.000.
Sulzer Brothers Ltd.: *See*—
Tiefenthaler, Edelbert, 4,278,619, Cl. 261-62.000.
Sumitomo Electric Industries, Ltd.: *See*—
Ihara, Susumu; Kashiuchi, Yoshinobu; and Jinguji, Isamu, 4,278,934, Cl. 324-61.00P.
Ihara, Susumu; and Nakamura, Kizashi, 4,278,935, Cl. 324-61.00P.
Sunayama, Masuki: *See*—
Kimura, Yoshinori; Sunayama, Masuki; and Okamoto, Yoshiki, 4,278,975, Cl. 343-6.00R.
Sund, Erling T., to Bell Telephone Laboratories, Incorporated. Test arrangement for automatic number identification systems. 4,278,849, Cl. 179-175.20C.
Sung, Rodney L.; and Zoleski, Benjamin H., to Texaco Inc. Diesel lubricant containing benzotriazole derivatives. 4,278,553, Cl. 252-50.000.
Suntech, Inc.: *See*—
Schneider, Abraham; and Myers, Harry K., Jr., 4,278,823, Cl. 585-22.000.
Sunworks, Inc.: *See*—
Hopper, Thomas P., 4,278,076, Cl. 126-450.000.
Suppa, Vito, to Thomson-CSF. Releasable airborne buoy. 4,279,025, Cl. 367-3.000.
Surface Technology, Inc.: *See*—
Thomann, Thomas G., 4,278,712, Cl. 427-304.000.
Sutton, George W.: *See*—
Ahouse, David R.; Daugherty, Jack D.; Glickler, Sheldon L.; Kellen, Paul F.; Sutton, George W.; Korff, David; and Yoder, Marvel J., 4,278,950, Cl. 331-94.50G.
Suzuki, Akiyoshi: *See*—
Kato, Yuzo; Ogino, Yasuo; Hiraga, Ryozo; Yoshinari, Hideki; Tozuka, Masao; Kano, Ichiro; and Suzuki, Akiyoshi, 4,278,893, Cl. 250-548.000.
Suzuki, Hiroshi: *See*—
Nishikawa, Akio; Suzuki, Hiroshi; and Kohkame, Hisashi, 4,278,780, Cl. 525-488.000.
Suzuki, Hitoshi; and Omagari, Masaharu, to Honda Giken Kogyo Kabushiki Kaisha. Wheel for an elastic U-shaped tire. 4,278,297, Cl. 301-6.00D.
Suzuki, Kazuo: *See*—
Ishizuka, Hiroshi; and Suzuki, Kazuo, 4,278,448, Cl. 51-295.000.
Suzuki, Toshio, to Sony Corporation. Color picture-in-picture television receiver. 4,278,993, Cl. 358-22.000.
Suzuki, Yasoji: *See*—
Masuda, Eiji; Sato, Chikara; and Suzuki, Yasoji, 4,278,943, Cl. 328-127.000.
Svehaug, Oswald C. Rocking mechanism for beds. 4,277,857, Cl. 5-62.000.
Svendsen, Lars G., to Pentapharm AG. Method for the quantitative determination of plasminogen activators. 4,278,762, Cl. 435-13.000.
Swanson, Paul D.: *See*—
Rammer, William L.; and Swanson, Paul D., 4,278,408, Cl. 417-551.000.
Swanson, Thomas A. Method and apparatus for cleaning sailboat bolt line tracks. 4,278,472, Cl. 134-8.000.
Swart, Daniel J.; and Kelyman, Jacqueline S., to Dow Chemical Company, The. Alternating copolyestercarbonate resins. 4,278,787, Cl. 528-191.000.
Synergistics Chemicals Limited: *See*—
Crocker, Zenas; and Jonah, Wilford B., 4,278,530, Cl. 209-3.000.
Syntex (U.S.A.) Inc.: *See*—
Alvarez, Francisco S., 4,278,669, Cl. 424-243.000.
Szabo, Gustav. Removable seismic gap filler. 4,278,232, Cl. 249-183.000.
Szabo, Lajos: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Karpati, Egon; and Szporny, Laszlo, 4,278,682, Cl. 424-267.000.
Szabo, Stephan L. Knife. 4,277,888, Cl. 30-162.000.
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Karpati, Egon; and Szporny, Laszlo, to Richter Gedeon Vegyeszeti Gyar Rt. Vasodilating method of treatment using a indolo-quinolizine-monoester, diester or nitrile. 4,278,682, Cl. 424-267.000.
Szasz, Tibor, to TMC Corporation. Ski brake. 4,278,268, Cl. 280-605.000.
Szporny, Laszlo: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Karpati, Egon; and Szporny, Laszlo, 4,278,682, Cl. 424-267.000.
Tada, Takeo, to TDK Electronics Co., Ltd. Process for producing flexible magnets. 4,278,556, Cl. 252-62.540.
Tadokoro, Tomoo; and Honda, Yasuo, to Toyo Kogyo Co., Ltd. Catalytic converter for purifying gases. 4,278,639, Cl. 422-171.000.
Tagaya, Kiyoshi: *See*—
Noguchi, Kazuo; Fujimaki, Hiroto; Tagaya, Kiyoshi; Ajima, Shigetoshi; Takada, Kazutoshi; and Okuda, Kensuke, 4,278,584, Cl. 260-38.000.
Taguchi, Tetsuya: *See*—
Ito, Fumio; Harigaya, Isao; Taguchi, Tetsuya; Tamura, Shuichi; Hirohata, Michio; and Matsuda, Mutsuhide, 4,278,336, Cl. 354-51.000.
Taiho Kogyo Co., Ltd.: *See*—
Nara, Tamotsu; and Kamiya, Soji, 4,278,740, Cl. 428-653.000.
Taiho Pharmaceutical Company, Limited: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,278,672, Cl. 424-248.400.
Tait, David A. G. A.C. Bridges. 4,278,932, Cl. 324-57.00R.
Tajima, Tsunemitsu: *See*—
Murayama, Tetsuo; Otsuka, Shigenori; and Tajima, Tsunemitsu, 4,278,747, Cl. 430-82.000.
Takada, Juichiro. Double-safety emergency locking belt retractor. 4,278,216, Cl. 242-107.40A.
Takada, Kazutoshi: *See*—
Noguchi, Kazuo; Fujimaki, Hiroto; Tagaya, Kiyoshi; Ajima, Shigetoshi; Takada, Kazutoshi; and Okuda, Kensuke, 4,278,584, Cl. 260-38.000.
Takahashi, Kihei; Terada, Seiko; and Oofusa, Masaatsu, to Yoshida Kogyo, K.K. Apparatus for manufacturing a woven slide fastener stringer. 4,278,111, Cl. 139-35.000.
Takahashi, Kihei, to Yoshida Kogyo, K.K. Yarn feeder. 4,278,112, Cl. 139-452.000.
Takahashi, Ryoji: *See*—
Nakazawa, Tetsuo; Sakai, Junji; Morimoto, Syogo; Tanigawa, Takatoshi; Takahashi, Ryoji; and Okazaki, Seiji, 4,278,581, Cl. 260-29.60M.
Takashima, Masaru, to Aikoh, Co., Ltd. Filter medium for fluid. 4,278,544, Cl. 210-503.000.
Takasue, Takashi: *See*—
Matsui, Kazumi; Takasue, Takashi; and Iwasaki, Masami, 4,278,164, Cl. 198-334.000.
Takaya, Tadashi, to Murata Manufacturing Co., Ltd. Piezoelectric buzzer. 4,278,851, Cl. 179-179.000.
Takazawa, Ietsugu. Curtain hanger. 4,277,865, Cl. 24-345.000.
Takeda Chemical Industries, Ltd.: *See*—
Ochiai, Michihiko; Morimoto, Akira; and Matsushita, Yoshihiro, 4,278,671, Cl. 424-246.000.
Takei, Yoshiaki: *See*—
Goto, Satoshi; Takei, Yoshiaki; Imaho, Ichiro; and Nomori, Hiroyuki, 4,278,746, Cl. 430-59.000.
Takeyama, Masahiro: *See*—
Ogita, Minoru; and Takeyama, Masahiro, 4,278,980, Cl. 343-748.000.
Takikawa, Katsuo: *See*—
Fujimura, Hajime; Hiramatsu, Yasuzo; Yabuuchi, Takahiro; Hisaki, Masakatu; Takikawa, Katsuo; Honna, Takaji; Miyake, Hidekazu; and Kajitani, Makoto, 4,278,672, Cl. 424-248.400.
Tamai, Yasukatsu: *See*—
Matsuda, Minoru; Iwasaki, Hirotsugu; Tamai, Yasukatsu; Iino, Masashi; and Fukutome, Hiroshi, 4,278,442, Cl. 44-1.00R.

Tamazawa, Tsuyoshi: *See*—
Yasuhara, Seishi; Tamazawa, Tsuyoshi; and Yamauchi, Katsuto, 4,278,407, Cl. 417-292.000.

Tamura, Masaaki: *See*—
Mawatari, Masahiko; and Tamura, Masaaki, 4,278,924, Cl. 318-314.000.

Tamura, Shuichi: *See*—
Ito, Fumio; Harigaya, Isao; Taguchi, Tetsuya; Tamura, Shuichi; Hirohata, Michio; and Matsuda, Mutsuhide, 4,278,336, Cl. 354-51.000.

Tan, Ewe-Hong: *See*—
Wolff, Siegfried; and Tan, Ewe-Hong, 4,278,587, Cl. 260-42.370.

Tan, Swie-In, to International Business Machines Corporation. System for chip joining by short wavelength radiation. 4,278,867, Cl. 219-121.0LD.

Tanahashi, Fumitaka. Wireless detection and warning system. 4,278,967, Cl. 340-539.000.

Tanaka Business Machines Co. Ltd.: *See*—
Kato, Toshio, 4,278,878, Cl. 235-92.0PK.

Tanaka, Kazuo, to Canon Kabushiki Kaisha. Photographic objective which prevents variation in angular field of view during focusing. 4,278,331, Cl. 350-411.000.

Tanaka, Masahiro; and Konoshima, Katunaga, to Olympus Optical Co., Ltd. Apparatus for cleaning endoscope. 4,278,101, Cl. 134-167.00C.

Tanaka, Yoshio. Post card. 4,278,199, Cl. 229-92.800.

Taneda, Kozo: *See*—
Ido, Kazuo; Sogo, Yukio; Taneda, Kozo; Sakai, Katzuji; and Sato, Yoichiro, 4,278,452, Cl. 55-261.000.

Tanigawa, Takatoshi: *See*—
Nakazawa, Tetsuo; Sakai, Junji; Morimoto, Syogo; Tanigawa, Takatoshi; Takahashi, Ryoji; and Okazaki, Seiji, 4,278,581, Cl. 260-29.60M.

Taniyama, Susumu; Shimaoka, Goro; and Inoue, Shoichi, to Mitsubishi Gas Chemical Company Inc. Method of curing an organoalkoxysilane compound. 4,278,783, Cl. 528-23.000.

Tanner, Roberta R.: *See*—
Andrew, Jerry C.; and Tanner, Roberta R., 4,278,342, Cl. 355-3.0CH.

Tateishi, Fumikazu: *See*—
Nakayama, Yoshikazu; Tateishi, Fumikazu; and Fujito, Katsuyuki, 4,278,318, Cl. 350-3.780.

Taylor, William I.: *See*—
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,278,569, Cl. 252-522.00R.

TDK Electronics Co., Ltd.: *See*—
Tada, Takeo, 4,278,556, Cl. 252-62.540.

Technic, Inc.: *See*—
Morrissey, Ronald J., 4,278,514, Cl. 204-47.000.

Technicon Instruments Corporation: *See*—
Lipshutz, Victor G.; and Stark, Edward, 4,278,887, Cl. 250-432.000.

Tecumseh Products Company: *See*—
Campen, Kenneth W., 4,278,054, Cl. 123-146.50A.

Teichmann, Gunther: *See*—
Botta, Artur; Rother, Heinz-Joachim; and Teichmann, Gunther, 4,278,791, Cl. 542-412.000.

Tele-Alarm, Nachrichtentechntehe Gerate GmbH: *See*—
Hofmann, Otto; and Nagler, Georg, 4,278,879, Cl. 235-380.000.

Teledyne Industries, Inc.: *See*—
Nevins, Glenn T.; and Keely, William A., 4,278,866, Cl. 219-121.0EC.

Telxon Corporation: *See*—
See, Gary G.; and Robbins, Robert J., 4,279,021, Cl. 364-900.000.

Teplyakov, Vladimir V.: *See*—
Nametkin, Nikolai S.; Durgarian, Sergei G.; Novitsky, Eduard G.; Filippova, Valentina G.; Gladkova, Natalya K.; and Teplyakov, Vladimir V., 4,278,774, Cl. 525-100.000.

Terada, Seiko: *See*—
Takahashi, Kihei; Terada, Seiko; and Oofusa, Masaatsu, 4,278,111, Cl. 139-35.000.

Terdenge, Bernhard: *See*—
Staat, Karl-Hans; Zacharias, Theodor; and Terdenge, Bernhard, 4,277,967, Cl. 72-224.000.

Terry, Claude E.: *See*—
Poteet, William C.; Terry, Claude E.; Hamrick, Glen F.; and Walls, Francis G., 4,278,482, Cl. 156-78.000.

Tessler, Martin M., to National Starch and Chemical Corporation. Preparation of cationic starch graft copolymers from starch, N,N-methylenebisacrylamide, and polyamines. 4,278,573, Cl. 260-17.4GC.

Texaco Inc.: *See*—
Powell, Justin C., 4,278,604, Cl. 260-346.740.
Satter, Abdus; Widmyer, Richard H.; Shum, Yick M.; and Howard, Curtis E., 4,278,128, Cl. 166-250.000.
Sung, Rodney L.; and Zoleski, Benjamin H., 4,278,553, Cl. 252-50.000.
Vanderford, James R., 4,278,964, Cl. 340-347.0DA.

Tezuka, Keizo; Okuyama, Genichiro; Tokunaga, Kazunobu; and Otani, Yasuhisa, to Kanebo, Ltd. Creamy or milky skin cosmetic compositions containing natural materials as emulsifying agents. 4,278,657, Cl. 424-63.000.

Thakkar, Arvind L., to Eli Lilly and Company. Novel polymorphic crystalline form of dibenzopyranone. 4,278,603, Cl. 260-345.300.

Thapar, Mangat R.: *See*—
Lambright, Orbie N.; and Thapar, Mangat R., 4,279,026, Cl. 367-70.000.

Thatcher, Richard E., to Philip Morris Incorporated. Method and apparatus for separating tobacco from rejected cigarettes. 4,278,100, Cl. 131-196.000.

Thebaud, Sacha. Chair provided with interlacing and intermeshing seat and back portions supported by arcuate support members. 4,278,288, Cl. 217-118.000.

Theeuwes, Felix, to Alza Corporation. Device with integrated operations for controlling release of agent. 4,278,087, Cl. 128-260.000.

Thermatool Corp.: *See*—
Rudd, Wallace C.; and Udall, Humfrey N., 4,278,868, Cl. 219-123.000.
Udall, Humfrey N., 4,277,871, Cl. 29-157.30C.

Thesing, Heinrich: *See*—
Bortz, Karl; Thesing, Heinrich; and Eichbaum, Friedrich, 4,278,296, Cl. 299-87.000.

Thien, Gerhard: *See*—
List, Hans; Skatsche, Othmar; Thien, Gerhard; Fachbach, Heinz; Greier, Josef; and Wagner, Johann, 4,278,055, Cl. 123-195.00S.

Thomann, Thomas G., to Surface Technology, Inc. Method for activating non-noble metal colloidal dispersion by controlled oxidation for electroless plating. 4,278,712, Cl. 427-304.000.

Thomas, Douglas C.: *See*—
Reeves, William G.; and Thomas, Douglas C., 4,278,088, Cl. 128-270.000.

Thompson, David L., to Volz, David M. Diffusion tube support collar. 4,278,422, Cl. 432-188.000.

Thompson, Jack E. Generation of electrical energy. 4,278,743, Cl. 429-119.000.

Thomson-CSF: *See*—
Cachier, Gerard; and Espaignol, Jacques, 4,278,951, Cl. 331-96.000.
Suppa, Vito, 4,279,025, Cl. 367-3.000.

Thorn Electrical Industries Limited: *See*—
Antonis, Basil, 4,278,908, Cl. 313-177.000.

Thorneburg, James L. Socks with integrally knit cushions in heel, arch and ball. 4,277,959, Cl. 66-182.000.

Thunell, Charles R., to Fairfax Investment Corp. Method for stocking wallboard into a building. 4,278,395, Cl. 414-786.000.

Tidquist, Quinton. Method of stack cutting. 4,278,478, Cl. 148-9.00R.

Tiede, Ralph L.: *See*—
Chrisman, Max G.; Ganzala, Gary W.; and Tiede, Ralph L., 4,278,460, Cl. 65-134.000.

Tiefenthaler, Edelbert, to Sulzer Brothers Ltd. Steam throttle valve. 4,278,619, Cl. 261-62.000.

TII Corporation: *See*—
Wortman, Donald W., 4,278,847, Cl. 179-170.0NC.

Timber Products Inspection & Testing Service: *See*—
Pennington, Chester R., 4,278,024, Cl. 101-405.000.

Timex Corporation: *See*—
Lowdenslager, John; and Willis, Alan E., 4,279,028, Cl. 368-11.000.

Timko born Jozsa, Judit; Blickle, Tibor; Borlai, Oszkar; and Ujhidy, Aurel, to Magyar Tudomanyos Akademia Muszakikemiai Kutato Intezete. Process and apparatus for the determination of the physical characteristics of dispersed systems by holography. 4,278,319, Cl. 350-3.780.

Titzenthaler, Eckart: *See*—
Mross, Wolf D.; Titzenthaler, Eckart; Koopmann, Juergen; Schwarzmann, Matthias; and Vogt, Volker, 4,278,562, Cl. 252-430.000.

TMC Corporation: *See*—
Szasz, Tibor, 4,278,268, Cl. 280-605.000.

Tokunaga, Kazunobu: *See*—
Tezuka, Keizo; Okuyama, Genichiro; Tokunaga, Kazunobu; and Otani, Yasuhisa, 4,278,657, Cl. 424-63.000.

Tokyo Sanyo Electric Co., Ltd.: *See*—
Kishi, Hiroyasu, 4,278,901, Cl. 307-350.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Ichinose, Kazuaki, 4,278,903, Cl. 307-514.000.
Kimura, Yoshinori; Sunayama, Masuki; and Okamoto, Yoshiki, 4,278,975, Cl. 343-6.00R.
Masuda, Eiji; Sato, Chikara; and Suzuki, Yasoji, 4,278,943, Cl. 328-127.000.
Mawatari, Masahiko; and Tamura, Masaaki, 4,278,924, Cl. 318-314.000.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Abe, Kazuhiro, 4,279,022, Cl. 364-900.000.

Tolasch, Gerhard: *See*—
Bardenhagen, Dietrich; Raschka, Wolfgang; Glosmann, Josef; and Tolasch, Gerhard, 4,278,385, Cl. 414-419.000.

Tomich, Wayne K. Wall mounted log chute. 4,278,163, Cl. 193-34.000.

Tomy Kogyo Co., Inc.: *See*—
Hirose, Tomiyuki, 4,278,253, Cl. 273-121.00R.
Nikaido, Teruo, 4,277,908, Cl. 46-92.000.

Toriumi, Shiro; Saijo, Takao; Endo, Hiroshi; Kamimura, Kuniaki; and Saito, Takanori, to Minolta Camera Kabushiki Kaisha. Reading and printing apparatus. 4,278,346, Cl. 355-45.000.

Tosi, Pierre G., to Pont-A-Mousson S.A. Control mechanism for disc brakes. 4,278,152, Cl. 188-71.900.

Tosswill, Christopher H., to Galileo Electro-Optics Corp. Far field imaging. 4,278,891, Cl. 250-505.000.

Towae, Friedrich: *See*—
Merger, Franz; and Towae, Friedrich, 4,278,805, Cl. 560-25.000.

Toy, Madeline S.; Stringham, Roger S.; and Fogg, Lawrence C., to Science Applications, Inc. Method and means for producing fluorocarbon finishes on fibrous structures. 4,278,703, Cl. 427-54.100.

Toyama, Masamichi; Hirata, Noritsugu; Iwama, Hideto; Okajima, Hidekazu; and Nishimura, Akimasa, to Canon Kabushiki Kaisha.

Camera having an automatic focus adjusting device. 4,278,340, Cl. 354-195.000.
Toyo Kogyo Co., Ltd.: *See—*
Tadokoro, Tomoo; and Honda, Yasuo, 4,278,639, Cl. 422-171.000.
Toyo Rubber Industry Co., Ltd., The: *See—*
Mizutani, Hitoshi; Nakajima, Zenji; Horikiri, Yoshito; Harada, Hiroshi; and Yokotsuji, Yasushi, 4,278,262, Cl. 277-212.0FB.
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; and Yamamoto, Yasushi, to Shin-Etsu Chemical Co., Ltd. Novel organosilicon compounds and anti-transplanted tumor agents containing the same. 4,278,666, Cl. 424-184.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Higashigawa, Keizo; and Shinoda, Kazuo, 4,278,618, Cl. 261-34.00A.
Isobe, Toshiaki; and Yokoyama, Tatsuo, 4,278,060, Cl. 123-440.000.
Mizutani, Hitoshi; Nakajima, Zenji; Horikiri, Yoshito; Harada, Hiroshi; and Yokotsuji, Yasushi, 4,278,262, Cl. 277-212.0FB.
Nakaho, Junichi, 4,278,215, Cl. 242-107.200.
Numazawa, Akio; Matoba, Taketo; and Kida, Makoto, 4,277,984, Cl. 74-492.000.
Otsuka, Yasuhiro; Hori, Ryuzo; Matsumoto, Shinichi; Uchida, Kiyoshi; and Furutani, Toshinobu, 4,278,509, Cl. 204-1.00T.
Tozuka, Masao: *See—*
Kato, Yuzo; Ogino, Yasuo; Hiraga, Ryozo; Yoshinari, Hideki; Tozuka, Masao; Kano, Ichiro; and Suzuki, Akiyoshi, 4,278,893, Cl. 250-548.000.
Tracy, David J., to GAF Corporation. ω,ω-Bis(dialkylhydroxyphenyl) alkanols as intermediates in making effective antioxidants. 4,278,821, Cl. 568-723.000.
Tracy, Kurt L. Ratchet wrench handle. 4,277,989, Cl. 81-62.000.
Traub, Fritz: *See—*
Hiller, Heinrich; Eilingsfeld, Heinz; Reinicke, Helmut; and Traub, Fritz, 4,278,606, Cl. 260-380.000.
Traut, Earl W. Linear bearing devices. 4,278,304, Cl. 308-6.00R.
Traxler, Peter; Gruner, Johannes; and Nuesch, Jakob, to Ciba-Geigy Corporation. Papulacandin derivatives and pharmaceutical compositions containing same. 4,278,665, Cl. 424-181.000.
Treczka, Leo: *See—*
Spinner, Georg; and Treczka, Leo, 4,278,956, Cl. 333-81.00A.
Trelleborg AB: *See—*
Sandberg, Nils A., 4,278,365, Cl. 406-30.000.
Tremont, Samuel J.; Williamson, Alex N.; and Solodar, Arthur J., to Monsanto Company. Dehydrocoupling of toluene. 4,278,824, Cl. 585-428.000.
Tremont, Samuel J.; and Williamson, Alex N., to Monsanto Company. Dehydrocoupling of toluene. 4,278,825, Cl. 585-428.000.
Tremont, Samuel J.; Williamson, Alex N.; and Solodar, Arthur J., to Monsanto Company. Dehydrocoupling of toluene. 4,278,826, Cl. 585-428.000.
Triumph Werke Nurnberg A.G.: *See—*
Zahner, Peter; and Puch, Diethelm, 4,278,358, Cl. 400-144.200.
Trott, Richard J.: *See—*
Loveless, W. L.; Trott, Richard J.; Heath, Robert H.; and Glick, William L., 4,278,366, Cl. 406-88.000.
Trudell, Richard E.: *See—*
Esthimer, William F.; Morin, Edward H.; and Trudell, Richard E., 4,277,945, Cl. 60-710.000.
TRW Inc.: *See—*
Wolfe, John R., III, 4,278,373, Cl. 408-188.000.
TRX, Inc.: *See—*
Barry, Richard L., 4,278,706, Cl. 427-96.000.
Tsai, Kuo L. Water-saving toilet bowl. 4,277,854, Cl. 4-420.000.
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Crowe, John J., 4,277,988, Cl. 76-107.00R.
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Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., 4,278,811, Cl. 564-15.000.
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Hill, Bernhard; Schmidt, Klaus P.; and Graf, Gerhard, 4,278,981, Cl. 346-108.000.
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Harner, Kermit I.; and Patrick, John P., 4,277,940, Cl. 60-243.000.
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Lynn, Scott; and Dubs, Bernard J., 4,278,646, Cl. 423-226.000.
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van der Piepen, Rolf; and Vollhardt, Frohmut, to Gutehoffnungshutte Stockrade AG. Apparatus for extracting granular or finely divided solid materials from a gas under pressure. 4,278,451, Cl. 55-227.000.
Vanderpool, Clarence D.; MacInnis, Martin B.; McClintic, Robert P.; and Gingerich, Richard G. W., to GTE Products Corporation. Process for recovering cobalt. 4,278,463, Cl. 75-0.50A.
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Van Dusseldorp, Larry R., to Marting Mfg. Inc. Animal feeder. 4,278,049, Cl. 119-53.500.
Van Eek, Wouter, deceased (by Beckett, Meryl A. M. Van Eek nee, legal representative), to Stamicarbon, B.V. Apparatus for extracting minerals through a borehole. 4,278,137, Cl. 175-267.000.
van Gerven, Hans, to Erbe Elektromedizin KG. Cryosurgical device. 4,278,090, Cl. 128-303.100.
van Loo, William J.: *See*—
Zwick, Maurice M.; and van Loo, William J., 4,278,634, Cl. 264-168.000.
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Van Sloun, Peter H., to Honeywell Inc. Acoustic sensor. 4,279,027, Cl. 367-125.000.
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Borden, Peter G., 4,278,473, Cl. 136-249.000.
Guarino, Nicholas, 4,278,380, Cl. 414-217.000.
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Collonia, Harald, 4,278,059, Cl. 123-399.000.
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Elmore, Charles E., 4,278,119, Cl. 145-62.000.
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O'Neal, James E., 4,277,878, Cl. 29-432.000.
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Kitamura, Masatsugu; Onoye, Hideo; and Yamazaki, Masami, 4,279,005, Cl. 360-66.000.
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Mross, Wolf D.; Titzenthaler, Eckart; Koopmann, Juergen; Schwarzmann, Matthias; and Vogt, Volker, 4,278,562, Cl. 252-430.000.
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Volkamer, Klaus; Brollos, Klaus; Lindner, Alfred; Wagner, Ulrich; Weitz, Hans-Martin; and Schneider, Klaus-Jurgen, to BASF Aktiengesellschaft. Isolation of a conjugated diolefin from a C_4- or C_5-hydrocarbon mixture. 4,278,504, Cl. 203-53.000.
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Vowles, Alexander E.: *See*—
Weideman, Christiaan R., 4,277,862, Cl. 15-110.000.

Vrijssen, Gerardus A. H. M.; and Franssen, Johannes P. T., to U.S. Philips Corporation. Electric discharge tube having a glass-sealed electric leadthrough and method of manufacturing such an electric leadthrough. 4,278,912, Cl. 313-331.000.

Vugrek, Andrija, to Western Electric Company, Inc. Cable feeding tool. 4,278,238, Cl. 254-134.3FT.

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Brax, Harri J.; Porinchak, Joseph F.; and Weinberg, Alan S., 4,278,738, Cl. 428-515.000.

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Waddington, Clive, to Avco Corporation. Stepless, variable stroke drive having a non-rotating cam. 4,277,986, Cl. 74-750.00B.

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Ahlborn, Gunther; Fiedler, Eberhard; Hubsch, Henry; and Kramer, Rolf, 4,278,030, Cl. 105-208.100.

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List, Hans; Skatsche, Othmar; Thien, Gerhard; Fachbach, Heinz; Greier, Josef; and Wagner, Johann, 4,278,055, Cl. 123-195.00S.

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Rowley, David S.; Aumann, James T.; and Waldes, Lothar H., 4,278,138, Cl. 175-320.000.

Waldman, Steven B., to United States of America, Army. Optical fiber slip ring. 4,278,323, Cl. 350-96.200.

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Walker, Ralph S.: *See*—
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Wallace, Steven A., to United States of America, Energy. In-line assay monitor for uranium hexafluoride. 4,278,886, Cl. 250-393.000.

Wallischeck, Karl H.; and Smith, James H., to United Technologies Corporation. Fluid flow regulator valve. 4,278,010, Cl. 91-420.000.

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Weisner, Kent A.; and Walls, Lester L., Jr., 4,278,414, Cl. 425-388.000.

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Walter, Jurgen: *See*—
Hackforth, Josef; and Walter, Jurgen, 4,277,958, Cl. 64-11.00R.

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Marchesini, Wainer, 4,278,384, Cl. 414-412.000.

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Ward, Ronald C.: *See*—
Regennitter, Jack; and Ward, Ronald C., 4,278,841, Cl. 179-5.00R.

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Haskell, Theodore H.; Hutt, Marland P., Jr.; Nicolaides, Ernest D.; Woo, Peter W. K.; and Huang, Gin G., 4,278,681, Cl. 424-266.000.

Waropay, Vincent M.: *See*—
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Brown, John E., 4,278,260, Cl. 277-110.000.
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Lawrence, Hopeton S.; and Michalski, John D., 4,278,538, Cl. 209-580.000.
Partus, Fred P., 4,278,459, Cl. 65-18.000.
Vugrek, Andrija, 4,278,238, Cl. 254-134.3FT.
Wong, Ching-Ping, 4,278,784, Cl. 528-27.000.
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Boundy, Bruce K., 4,278,834, Cl. 174-48.000.
Kapadia, Jayant K.; and Matty, Thomas C., 4,278,900, Cl. 307-311.000.
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Mueller, Edward E.; Harrod, Michael K.; and Hagemeister, Frederick C., 4,278,383, Cl. 414-412.000.
White, Lawrence K.; Comizzoli, Robert B.; and Schnable, George L., to RCA Corporation. Method of detecting a cathodic corrosion site on a metallized substrate. 4,278,508, Cl. 204-1.00T.
White, Raymond R., to Ilsco Corporation. Rejector fuse clip assembly. 4,278,316, Cl. 339-258.00R.
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Williams, Brown F., to RCA Corporation. Method for forming an electrical contact to a solar cell. 4,278,704, Cl. 427-75.000.
Williams, Hugh M. Watercolor paper stretcher. 4,277,901, Cl. 38-102.200.
Williams, Theodore L. Security lock nut assembly for padlocks. 4,277,961, Cl. 70-54.000.
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Williamson, Robert D. Method and apparatus for beverage dispensing control and quantity monitoring. 4,278,186, Cl. 222-36.000.
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Willis, Wilburn C., to Aluminum Company of America. Container closure with breakable annular ring. 4,278,180, Cl. 215-252.000.
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Scheinbaum, Marc C.; and Winburn, Anne L., 4,278,197, Cl. 229-30.000.
Wineholt, Robert L.; and Feeman, James F., to Crompton & Knowles Corp. 4,4'-Thiodiphenol-formaldehyde condensation products. 4,278,616, Cl. 260-512.00C.
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Artweger, Wolfgang; and Burger, Anton, 4,277,919, Cl. 52-2.000.
Wolfe, John R., III, to TRW Inc. Indexable insert drill. 4,278,373, Cl. 408-188.000.
Wolff, Erich: *See—*
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Wolff, Kurt, to Steinhaus GmbH, Firma. Screen decks. 4,278,535, Cl. 209-399.000.
Wolff, Siegfried; and Tan, Ewe-Hong, to Degussa Aktiengesellschaft. Vulcanizable rubber mixture based on halogen free rubber for vulcanizing these rubber mixtures and use of the rubber mixtures. 4,278,587, Cl. 260-42.370.
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Wolosianski, Alexandre. Apparatus for screw-threading. 4,278,374, Cl. 409-74.000.

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Wood, Prentice J., to Mead Corporation, The. Article carrier and blank therefor. 4,278,168, Cl. 206-183.000.
Woods, Richard E., to Reli Corporation. Driver warning system. 4,278,969, Cl. 340-576.000.
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Worrell, J. Robert, to Standard Oil Company (Indiana). VMP Riser release tool. 4,277,875, Cl. 29-253.000.
Wortman, Donald W., to TII Corporation. Transformerless hybrid circuits. 4,278,847, Cl. 179-170.0NC.
Wozniak, Stephen G., to Apple Computer, Inc. Digitally-controlled color signal generation means for use with display. 4,278,972, Cl. 340-703.000.
Wright, Peter J., to Ciba-Geigy AG. Receiving elements containing graft gelatin polymers as dye mordants. 4,278,749, Cl. 430-213.000.
Wu, Jiing-Liang, to Gould Inc. Arc driven single pressure type circuit breaker. 4,278,860, Cl. 200-148.00R.
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Yano, Kazuhiko; and Ohtsuki, Kazuhiko, to Kanzaki Kokyukoki Mfg. Co., Ltd. Clutch engaging and disengaging means. 4,278,156, Cl. 192-48.910.
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Yee, Kwok C., to Allied Chemical Corporation. Fluorinated benzenesulfonate diacetylenes. 4,278,561, Cl. 252-408.000.
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Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. 2,2,3-Trimethyl-3-cyclopenten-1-ylalkyl, alkenyl and alkylidene, cyclohexanols, organo-leptic uses thereof in perfume compositions, colognes and perfumed articles. 4,278,569, Cl. 252-522.00R.
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Yoshizawa, Kiyoshi; Nojiro, Kikuo; Itoh, Masamitsu; Kiuchi, Hiroshi; and Horii, Kazuo, to National Tax Administration Agency; and Kibun Company Limited. Method of purifying distillers solubles and use of the purified matter. 4,278,699, Cl. 426-624.000.
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Young, James E.; Walker, Ralph S.; and Chidester, James R. Flow regulating device for arterial catheter systems. 4,278,083, Cl. 128-214.00R.
Youngfleish, Frank C.: *See—*
Scheingold, William S.; and Youngfleish, Frank C., 4,278,311, Cl. 339-17.0CF.
Yuhash, Ladd: *See—*
Smith, William G.; and Yuhash, Ladd, 4,278,008, Cl. 89-156.000.
Zacharias, Theodor: *See—*
Staat, Karl-Hans; Zacharias, Theodor; and Terdenge, Bernhard, 4,277,967, Cl. 72-224.000.
Zahner, Peter; and Puch, Diethelm, to Triumph Werke Nurnberg A.G. Type carrier with impression control formation. 4,278,358, Cl. 400-144.200.
Zaiko, Edward J.; and Ranken, Paul F., to Ethyl Corporation. Method for the preparation of 2-fluoro-4-monobromomethylbiphenyl. 4,278,516, Cl. 204-158.0HA.

Zaweski, Edward F.; and Harstick, Christian S., to Ethyl Corporation. Lubricant composition. 4,278,555, Cl. 252-52.00A.

Zebroski, Edwin L.: *See*—
Levenson, Milton; and Zebroski, Edwin L., 4,278,559, Cl. 252-301.10R.

Zeitlin, Martin A.; and Harper, Jon J., to Standard Oil Company (Indiana). Low bromine content glacial acetic acid. 4,278,503, Cl. 203-28.000.

Zenith Radio Corporation: *See*—
Skerlos, Peter C., 4,279,035, Cl. 455-158.000.

Zeunik, Robert L.: *See*—
Eigenbrod, Lester K.; Kidder, Gerald F.; and Zeunik, Robert L., 4,277,950, Cl. 62-55.000.

Zhdanova, Nelli I.: *See*—
Debabov, Vladimir G.; Kozlov, Jury I.; Zhdanova, Nelli I.; Khurges, Evgeny M.; Yankovsky, Nikolai K.; Rozinov, Mikhail N.; Shakulov, Rustem S.; Rebentish, Boris A.; Livshits, Vitaly A.; Gusyatiner, Mikhail M.; Mashko, Sergei V.; Moshentseva, Vera N.; Kozyreva, Ljudmila F.; and Arsatiants, Raisa A., 4,278,765, Cl. 435-172.000.

Zimmerman, Dennis M., to Eli Lilly and Company. Intermediates to phenylmorphans and method of preparation thereof. 4,278,797, Cl. 546-112.000.

Zimmerman, Harry M. Cam-lock fitting. 4,278,279, Cl. 285-255.000.

Zimmermann, Johannes: *See*—
Korff, Joachim; Fremery, Max; and Zimmermann, Johannes, 4,278,819, Cl. 568-594.000.

Zinz, Alvin G., Sr. Flipper rest. 4,278,066, Cl. 124-41.00A.

Zipfel, Lothar. Adjustable mount for optical components. 4,278,324, Cl. 350-288.000.

Zobel, Don W., to Medtronic, Inc. Pacemaker with pulse width adjustment circuitry. 4,278,094, Cl. 128-419.0PG.

Zoleski, Benjamin H.: *See*—
Sung, Rodney L.; and Zoleski, Benjamin H., 4,278,553, Cl. 252-50.000.

Zurner, Hansjurgen; and Fuhrmann, Wolfgang, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Arrangement for actuating gas-change valves. 4,278,233, Cl. 251-57.000.

Zwick, Maurice M.; and van Loo, William J., to American Cyanamid Company. Biconstituent acrylic fibers by melt spinning. 4,278,634, Cl. 264-168.000.

Zyliss Zysset AG: *See*—
Ruberg, Richardt E., 4,278,114, Cl. 141-65.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF JULY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Berger, Abe, to M&T Chemicals Inc. Silicone containing bis-thioether aromatic amines. Re. 30,677, Cl. 556-423.000.

Brilli, Fosco. Method for forming inserts in shoe soles and the product obtained. Re. 30,672, Cl. 36-14.000.

Caswell, Robert L.: *See*—
Evans, Gregory W.; and Caswell, Robert L., Re. 30,679, Cl. 364-523.000.

Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See*—
Mori, Shigeo; and Fujita, Takeshi, Re. 30,676, Cl. 521-110.000.

Eaton Corp.: *See*—
Van Zeeland, Donald L.; and Schuchmann, Russell P., Re. 30,678, Cl. 361-44.000.

Evans, Gregory W.; and Caswell, Robert L., to Rockwell International Corporation. Character generating method and system. Re. 30,679, Cl. 364-523.000.

Feinbloom, William. Side view mirror employing prism for blind spot correction. Re. 30,673, Cl. 350-288.000.

Fujita, Takeshi: *See*—
Mori, Shigeo; and Fujita, Takeshi, Re. 30,676, Cl. 521-110.000.

Johns-Manville Corporation: *See*—
Wenda, Alojzy; and Olds, Leonard E., Re. 30,674, Cl. 65-29.000.

M&T Chemicals Inc.: *See*—
Berger, Abe, Re. 30,677, Cl. 556-423.000.

Mori, Shigeo; and Fujita, Takeshi, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Flame resistant polyurethane foam and process for producing the same. Re. 30,676, Cl. 521-110.000.

Olds, Leonard E.: *See*—
Wenda, Alojzy; and Olds, Leonard E., Re. 30,674, Cl. 65-29.000.

Rockwell International Corporation: *See*—
Evans, Gregory W.; and Caswell, Robert L., Re. 30,679, Cl. 364-523.000.

Schole, Murray L. Dentifrice. Re. 30,675, Cl. 424-54.000.

Schuchmann, Russell P.: *See*—
Van Zeeland, Donald L.; and Schuchmann, Russell P., Re. 30,678, Cl. 361-44.000.

Van Zeeland, Donald L.; and Schuchmann, Russell P., to Eaton Corp. Dormant oscillator ground to neutral protection for ground fault interrupters. Re. 30,678, Cl. 361-44.000.

Wenda, Alojzy; and Olds, Leonard E., to Johns-Manville Corporation. Method and apparatus for feeding a glass melting furnace. Re. 30,674, Cl. 65-29.000.

LIST OF DESIGN PATENTEES

A. Ahlstrom Osakeyhtio: *See*—
Sarpaneva, Timo, 259,845, Cl. D7-11.000.

Aktiebolaget Bahco Verktyg: *See*—
Wahlberg, Ulf H., 259,854, Cl. D8-58.000.

Allied Plastics, Inc.: *See*—
Page, Cornelius D., Jr., 259,835, Cl. D3-40.000.

American Cyanamid Company: *See*—
Grodin, Adam J., 259,860, Cl. D9-432.000.

Audemars, Daniel; Simm, Wolfgang; and Steine, Hans-Theo, to Castolin S.A. Flame spraying torch. 259,851, 7-14-81, Cl. D8-30.000.

Bantin, Robert A.; and Kilbourn, Dean R., to BKB Industries, Inc. Hand manipulative aquatic toy. 259,888, 7-14-81, Cl. D21-59.000.

Barbera, Charles. Loudspeaker enclosure. 259,877, 7-14-81, Cl. D14-34.000.

Bata Shoe Company, Inc.: *See*—
Greenlee, James V., 259,823, Cl. D2-320.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Schneider, Louis; and Muth, Hans A., 259,836, Cl. D3-71.000.

Bib Hi-Fi Accessories Limited: *See*—
Westran, William C., 259,848, Cl. D7-161.000.

BKB Industries, Inc.: *See*—
Bantin, Robert A.; and Kilbourn, Dean R., 259,888, Cl. D21-59.000.

Boekamp, Konrad M. Free standing space heater. 259,892, 7-14-81, Cl. D23-122.000.

Business Concepts Marketing Corporation: *See*—
Pearl, Irwin, 259,879, Cl. D14-60.000.

Caran D'Ache SA: *See*—
Collaud, Jean-Michel; Girella, Albert; Herren, Maurice; Muller, Niklaus; and Piola, Roger, 259,894, Cl. D27-36.000.

Carrick, Della: *See*—
Hamby, Robert L., 259,847, Cl. D7-74.000.

Carrick, Leo L.: *See*—
Hamby, Robert L., 259,847, Cl. D7-74.000.

Castolin S.A.: *See*—
Audemars, Daniel; Simm, Wolfgang; and Steine, Hans-Theo, 259,851, Cl. D8-30.000.

Ciener, David M. Combined door lock bolt and cover plate. 259,856, 7-14-81, Cl. D8-331.000.

Collaud, Jean-Michel; Girella, Albert; Herren, Maurice; Muller, Niklaus; and Piola, Roger, to Caran D'Ache SA. Lighter. 259,894, 7-14-81, Cl. D27-36.000.

Confon AG: *See*—
Halm, Hans, 259,885, Cl. D19-76.000.

Corboy, Michael R. Screw propellor protection device for boats. 259,881, 7-14-81, Cl. D15-4.000.

Crealock, William I. B. Boat. 259,871, 7-14-81, Cl. D12-303.000.

Cridland, Michael: *See*—
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Croushore, James F. Water toy. 259,887, 7-14-81, Cl. D21-59.000.

Derbyshire, George C., to Jacobs Manufacturing Co., Ltd., The. Drill chuck. 259,855, 7-14-81, Cl. D8-68.000.

Dictaphone Corporation: *See*—
Pulos, Arthur J.; and Cridland, Michael, 259,876, Cl. D14-6.000.

Eiteljorg, James S.: *See*—
Feldman, Rubin; Paddock, Wilbur; and Eiteljorg, James S., 259,850, Cl. D8-30.000.

Eller, Chauncey B. Combined air pressure gauge and dual tire air filling device. 259,863, 7-14-81, Cl. D10-86.000.

Engebretsen, Einar O., to Hobart Corporation. Vegetable slicer housing. 259,883, 7-14-81, Cl. D15-97.000.

Englishtown Sportswear, Ltd.: *See*—
Heinfling, Martin, 259,820, Cl. D2-28.000.

Estes, Richard B. Andiron. 259,849, 7-14-81, Cl. D7-211.000.

Feldman, Rubin; Paddock, Wilbur; and Eiteljorg, James S. Combined heat applying roller and control device therefor. 259,850, 7-14-81, Cl. D8-30.000.

Ferrero, Giuseppe, to Fiat Veicoli Industriali S.p.A. Tractor-trailer aerodynamic drag reducer. 259,874, 7-14-81, Cl. D12-181.000.

Fiat Veicoli Industriali S.p.A.: *See*—
Ferrero, Giuseppe, 259,874, Cl. D12-181.000.

Fidel, Bruno. Floor tile. 259,893, 7-14-81, Cl. D25-80.000.

Finkel, Henry. Pill box. 259,858, 7-14-81, Cl. D9-418.000.

Furuyabu, Noriharu: *See*—
Yoshida, Toshihiko; and Furuyabu, Noriharu, 259,882, Cl. D15-52.000.

Gageby, Steven D. Chair. 259,837, 7-14-81, Cl. D6-69.000.

Gageby, Steven D. Chair. 259,838, 7-14-81, Cl. D6-69.000.

Girella, Albert: *See*—
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Greenlee, James V., to Bata Shoe Company, Inc. Shoe sole. 259,823, 7-14-81, Cl. D2-320.000.

Grodin, Adam J., to American Cyanamid Company. Carton. 259,860, 7-14-81, Cl. D9-432.000.

Halm, Hans, to Confon AG. Telephone index. 259,885, 7-14-81, Cl. D19-76.000.

Hamby, Robert L., to Carrick, Leo L.; and Carrick, Della. Flatware rack. 259,847, 7-14-81, Cl. D7-74.000.

Hanafod, Donald E. Chair back. 259,844, 7-14-81, Cl. D6-197.000.

Hanson, Walter E. Automobile and truck rear view mirror. 259,875, 7-14-81, Cl. D12-187.000.

Havey, Morton L.; and Pufpaff, Richard N., to Recognition Equipment Incorporated. Ribbon cartridge. 259,884, 7-14-81, Cl. D18-12.000.

Heinfling, Martin, to Englishtown Sportswear, Ltd. Pocket for jeans or the like. 259,820, 7-14-81, Cl. D2-28.000.

Herren, Maurice: *See*—
Collaud, Jean-Michel; Girella, Albert; Herren, Maurice; Muller, Niklaus; and Piola, Roger, 259,894, Cl. D27-36.000.

Hirtle, Clayton N. Cap for dispensing disinfectants. 259,861, 7-14-81, Cl. D9-450.000.

Hobart Corporation: *See*—
Engebretsen, Einar O., 259,883, Cl. D15-97.000.

Interdica S.A.: *See—*
Perrin, Alain D., 259,846, Cl. D7-15.000.
Iwata Electric Co., Ltd.: *See—*
Iwata, Keisuke, 259,880, Cl. D14-68.000.
Iwata, Keisuke, to Iwata Electric Co., Ltd. Bracket mounted motor vehicular radio receiver housing or similar article. 259,880, 7-14-81, Cl. D14-68.000.
Jack Daniel Distillery, Lem Motlow, Prop., Inc.: *See—*
Redmond, Jobie G., 259,839, Cl. D6-70.000.
Redmond, Jobie G., 259,840, Cl. D6-70.000.
Jacobs Manufacturing Co., Ltd., The: *See—*
Derbyshire, George C., 259,855, Cl. D8-68.000.
Julinot, Helmut D., to Kenyon, Stewart. Planter. 259,868, 7-14-81, Cl. D11-156.000.
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Machida, Naoyoshi, 259,853, Cl. D8-57.000.
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Kenyon, Stewart T.; Kenyon, Walter C.; and Julinot, Helmut D., to Kenyon, Stewart T. Hydroponic gardening tray. 259,867, 7-14-81, Cl. D11-155.000.
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Bantin, Robert A.; and Kilbourn, Dean R., 259,888, Cl. D21-59.000.
Kostoff, Paul S. Combined merchandise advertising and telephone order booth. 259,842, 7-14-81, Cl. D6-130.000.
Lolift Limited: *See—*
Nattrass, Frank, 259,857, Cl. D9-432.000.
Machida, Naoyoshi, to Kai Cutlery Center Co., Ltd. Scissors. 259,852, 7-14-81, Cl. D8-57.000.
Machida, Naoyoshi, to Kai Cutlery Center Co., Ltd. Scissors. 259,853, 7-14-81, Cl. D8-57.000.
MacLean, Charles A. Horseman figure. 259,869, 7-14-81, Cl. D11-159.000.
Marantette, Thomas L. Support to hold potted plants above water level. 259,870, 7-14-81, Cl. D11-164.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
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Melzi, Edward R.: *See—*
Melzi, Renate M.; and Melzi, Edward R., 259,822, Cl. D2-283.000.
Melzi, Renate M.; and Melzi, Edward R. Shoe. 259,822, 7-14-81, Cl. D2-283.000.
Michael Yates Carved Crystal, Inc.: *See—*
Yates, Robert M., 259,886, Cl. D19-97.000.
Milner, William J. Grill guard for vans. 259,873, 7-14-81, Cl. D12-171.000.
Mioni, Marcello. Chair. 259,841, 7-14-81, Cl. D6-74.000.
Mortillaro, Karen G. A. Disappearing spheroid display. 259,866, 7-14-81, Cl. D11-131.000.
Muller, Niklaus: *See—*
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Murphy, Esperia. Bedside table. 259,843, 7-14-81, Cl. D6-163.000.
Muth, Hans A.: *See—*
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Myles, Jacquelyn A. B. Swimsuit. 259,821, 7-14-81, Cl. D2-40.000.
Nattrass, Frank, to Lolift Limited. Container for bulk materials. 259,857, 7-14-81, Cl. D9-432.000.
Nite Train-R Enterprises, Inc.: *See—*
Snyder, Joe W., 259,864, Cl. D10-116.000.
Ogniewski, George R. Valve stem connector and strain indicator. 259,891, 7-14-81, Cl. D23-19.000.
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Page, Cornelius D., Jr., to Allied Plastics, Inc. Article support console for automobiles. 259,835, 7-14-81, Cl. D3-40.000.
Paramount Pictures Corporation: *See—*
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Pearl, Irwin, to Business Concepts Marketing Corporation. Display stand for telephone attachment. 259,879, 7-14-81, Cl. D14-60.000.
Perrin, Alain D., to Interdica S.A. Beverage cup. 259,846, 7-14-81, Cl. D7-15.000.
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Ramsey, Donald G. Cover plate for a motorcycle crank case. 259,872, 7-14-81, Cl. D12-126.000.
Recognition Equipment Incorporated: *See—*
Havey, Morton L.; and Pufpaff, Richard N., 259,884, Cl. D18-12.000.
Redmond, Jobie G., to Jack Daniel Distillery, Lem Motlow, Prop., Inc. Chair. 259,839, 7-14-81, Cl. D6-70.000.
Redmond, Jobie G., to Jack Daniel Distillery, Lem Motlow, Prop., Inc. Throw cushion chair. 259,840, 7-14-81, Cl. D6-70.000.
Sarpaneva, Timo, to A. Ahlstrom Osakeyhtio. Goblet or similar article. 259,845, 7-14-81, Cl. D7-11.000.
Schneider, Louis; and Muth, Hans A., to Bayerische Motoren Werke Aktiengesellschaft. Luggage bag. 259,836, 7-14-81, Cl. D3-71.000.
Shanks, Ralph; and Shanks, Ralph, Jr. Shoe sole. 259,824, 7-14-81, Cl. D2-321.000.
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Audemars, Daniel; Simm, Wolfgang; and Steine, Hans-Theo, 259,851, Cl. D8-30.000.
Snyder, Joe W., to Nite Train-R Enterprises, Inc. Case for audible signal generator for enuresis prevention training device. 259,864, 7-14-81, Cl. D10-116.000.
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Audemars, Daniel; Simm, Wolfgang; and Steine, Hans-Theo, 259,851, Cl. D8-30.000.
Struby, Michel. Radiation-sensitive pendulum to be held in the hand. 259,865, 7-14-81, Cl. D10-47.000.
Thomas, Wesley L. Telephone. 259,878, 7-14-81, Cl. D14-53.000.
Tibbles, John C. Container for liquids. 259,859, 7-14-81, Cl. D9-432.000.
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Wahlberg, Ulf H., to Aktiebolaget Bahco Verktyg. Engineers' pliers. 259,854, 7-14-81, Cl. D8-58.000.
West, Fannie B. Doll. 259,890, 7-14-81, Cl. D21-166.000.
Westran, William C., to Bib Hi-Fi Accessories Limited. Device which is suitable for use in cleaning magnetic heads of magnetic tape recording and/or playback instruments. 259,848, 7-14-81, Cl. D7-161.000.
Yates, Robert M., to Michael Yates Carved Crystal, Inc. Paperweight or similar article. 259,886, 7-14-81, Cl. D19-97.000.
Yoshida, Toshihiko; and Furuyabu, Noriharu, to Matsushita Electric Industrial Co., Ltd. Vacuum cleaner. 259,882, 7-14-81, Cl. D15-52.000.
You, Chi T. Combined electronic clock and mirror. 259,862, 7-14-81, Cl. D10-2.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 14, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

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81 4,277,922
126 4,277,923
136 4,277,924
233 4,277,925
303 4,277,926
749 4,277,927

CLASS 53

67 4,277,928
331.5 4,277,929
396 4,277,930
412 4,277,931
497 4,277,932

CLASS 54

44 4,277,933
70 4,277,934

CLASS 55

80 4,278,450
227 4,278,451
261 4,278,452
275 4,278,453
302 4,278,454
337 4,278,455
429 4,278,456

CLASS 56

2 4,277,935
11.7 4,277,936
17.5 4,277,937

CLASS 60

39.35 4,277,938
202 4,277,939
243 4,277,940
307 4,277,941
517 4,277,942
646 4,277,943
670 4,277,944
710 4,277,945

CLASS 62

6 4,277,947
4,277,948
24 4,278,457
54 4,277,949
55 4,277,950
55.5 4,277,951
115 4,277,952
117 4,277,953
235.1 4,277,946
375 4,277,954
510 4,277,955

CLASS 64

9 R 4,277,956
4,277,957
11 R 4,277,958

CLASS 65

2 4,278,458
18 4,278,459
29 Re.30,674
134 4,278,460

CLASS 66

182 4,277,959

CLASS 68

205 R 4,277,960

CLASS 70

54 4,277,961
423 4,277,962
456 B 4,277,963
484 4,277,964

CLASS 71

87 4,278,461

CLASS 72

53 4,277,965
148 4,277,966
224 4,277,967
262 4,277,968
266 4,277,969

CLASS 73

32 R 4,277,970
55 4,277,971
339 R 4,277,974
362 AR 4,277,975
457 4,277,976
587 4,277,977
632 4,277,978
633 4,277,979
646 4,277,980
701 4,277,981
862.16 4,277,972
862.41 4,277,973

CLASS 74

191 4,277,982
477 4,277,983
492 4,277,984
713 4,277,985
750 B 4,277,986

CLASS 75

0.5 A 4,278,463
5 4,278,462
51 4,278,464
122 4,278,465
175.5 4,278,466

CLASS 76

25 A 4,277,987
107 R 4,277,988

CLASS 81

62 4,277,989
63 4,277,990
163 4,277,991
177 UJ 4,277,992

CLASS 82

37 4,277,993

CLASS 83

133 4,277,994
150 4,277,995
171 Q 4,277,996
225 4,277,997
404.1 4,277,998
425.3 4,277,999

CLASS 84

1.16 4,278,000
1.26 4,278,001
304 4,278,002
411 A 4,278,003
434 4,278,004

CLASS 89

24 4,278,007
156 4,278,008

CLASS 91

47 4,278,009
420 4,278,010
445 4,278,011

CLASS 99

278 4,278,012
288 4,278,013

CLASS 100

26 4,278,014
53 4,278,015
224 4,278,016

CLASS 101

3 SP 4,278,017
93 4,278,018
93.04 4,278,019
93.05 4,278,020
93.29 4,278,021
129 4,278,022
235 4,278,023
405 4,278,024

CLASS 102

254 4,278,026

CLASS 105

131 4,278,027
136 4,278,028
208.1 4,278,030
224.1 4,278,029

CLASS 106

2 4,278,467
111 4,278,468
278 4,278,469
281 R 4,278,470

CLASS 108

4 4,278,031
6 4,278,032

CLASS 109

59 R 4,278,033

CLASS 110

234 4,278,034

CLASS 111

2 4,278,035
52 4,278,036

CLASS 112

168 4,278,037
228 4,278,038
240 4,278,039

CLASS 114

170 4,278,040
210 4,278,041
218 4,278,042

CLASS 116

28 R 4,278,043

CLASS 118

256 4,278,044
323 4,278,045
695 4,278,046

CLASS 119

1 4,278,047
15 4,278,048
53.5 4,278,049

CLASS 122

39 4,278,050
406 A 4,278,051
449 4,278,052
488 4,278,053

CLASS 123

146.5 A 4,278,054
195 S 4,278,055
198 D 4,278,056
276 4,278,057
387 4,278,058
399 4,278,059
440 4,278,060
483 4,278,061
552 4,278,062
568 4,278,063
577 4,278,064

CLASS 124

20 R 4,278,065
41 A 4,278,066

CLASS 126

152 R 4,278,067
307 A 4,278,068
366 4,278,069
417 4,278,070
428 4,278,071
429 4,278,072
437 4,278,073
444 4,278,074
445 4,278,075
450 4,278,076

CLASS 127

37 4,278,471

CLASS 128

4 4,278,077
66 4,278,078
149 4,278,079
201.11 4,278,080
207.15 4,278,081
207.18 4,278,082
214 F 4,278,085
214 R 4,278,083
4,278,084
224 4,278,086
260 4,278,087
270 4,278,088
278 4,278,089
303.1 4,278,090
334 C 4,278,091
348 4,278,092
419 P 4,278,093
419 PG 4,278,094
689 4,278,095
695 4,278,096

CLASS 130

5 D 4,278,097

CLASS 131

178 4,278,099
196 4,278,100
276 4,278,098

CLASS 134

8 4,278,472
167 C 4,278,101

CLASS 136

232 4,278,828
248 4,278,829
249 4,278,473
4,278,474
255 4,278,830
256 4,278,831

CLASS 137

39 4,278,102
50 4,278,103
118 4,278,104
207 4,278,105
512.1 4,278,106
526 4,278,107
613 4,278,108
625.47 4,278,109
805 4,278,110

CLASS 139

35 4,278,111
452 4,278,112

CLASS 141

1 4,278,113
65 4,278,114
86 4,278,115
392 4,278,116

CLASS 144

144 R 4,278,117
193 A 4,278,118

CLASS 145

62 4,278,119

CLASS 148

1.5 4,278,475
4,278,476
6.14 R 4,278,477
9 R 4,278,478
23 4,278,479

CLASS 149

2 4,278,480

CLASS 152

209 R 4,278,121
225 C 4,278,122

CLASS 156

61 4,278,481
78 4,278,482
79 4,278,483
123 R 4,278,484
173 4,278,485
231 4,278,486
305 4,278,487
351 4,278,488
361 4,278,489
425 4,278,490
501 4,278,491
627 4,278,492
643 4,278,493

CLASS 159

16 A 4,278,494
27 A 4,278,495

CLASS 162

19 4,278,496
252 4,278,497

CLASS 164

28 4,278,123
125 4,278,124
412 4,278,125

CLASS 165

122 4,278,126

CLASS 166

63 4,278,127
250 4,278,128
263 4,278,129
332 4,278,130
4,278,131

CLASS 169

13 4,278,132

CLASS 172

14 4,278,133
373 4,278,134

CLASS 173

29 4,278,135

CLASS 174

14 R 4,278,832
42 4,278,833
48 4,278,834
70 R 4,278,835
84 S 4,278,836

CLASS 175

93 4,278,136
267 4,278,137
320 4,278,138

CLASS 176

36 R 4,278,498
37 4,278,499
4,278,500
78 4,278,501

CLASS 177

154 4,278,139

CLASS 178

22.09 4,278,837

CLASS 179

1 GS 4,278,839
1 SM 4,278,838
1.5 S 4,278,840
5 R 4,278,841
16 EA 4,278,842
18 B 4,278,844
18 BC 4,278,843
90 B 4,278,845
170 D 4,278,848
170 NC 4,278,847
175.2 C 4,278,849
175.31 R 4,278,850

179 4,278,851
182 R 4,278,852

CLASS 180

6.48 4,278,140
4,278,141
168 4,278,142
282 4,278,143
329 4,278,144

CLASS 181

30 4,278,145
116 4,278,025
210 4,278,146
256 4,278,147

CLASS 182

181 4,278,148

CLASS 185

39 4,278,149

CLASS 187

29 R 4,278,150

CLASS 188

71.3 4,278,151
71.9 4,278,152
251 M 4,278,153

CLASS 192

4 A 4,278,154
4 R 4,278,155
48.91 4,278,156
58 B 4,278,158
4,278,159
58 R 4,278,157
82 T 4,278,160
84 C 4,278,161
107 C 4,278,162

CLASS 193

34 4,278,163

CLASS 198

334 4,278,164
365 4,278,165
781 4,278,166

CLASS 200

16 D 4,278,853
52 A 4,278,854
67 D 4,278,855
82 R 4,278,856
83 R 4,278,857
84 B 4,278,858
144 R 4,278,859
148 R 4,278,860
340 4,278,861

CLASS 202

206 4,278,502

CLASS 203

28 4,278,503
53 4,278,504
59 4,278,505
68 4,278,506

CLASS 204

1 T 4,278,507
4,278,508
4,278,509
14 R 4,278,510
15 4,278,511
41 4,278,512
42 4,278,513
47 4,278,514
55 Y 4,278,515
158 HA 4,278,516
158 R 4,278,517
159.2 4,278,518
195 F 4,278,519
207 4,278,520
222 4,278,521
228 4,278,522
252 4,278,523
4,278,524
265 4,278,525
266 4,278,526
272 4,278,527
298 4,278,528

CLASS 206

45.34 4,278,167
183 4,278,168
303 4,278,169
422 4,278,170
451 4,278,171
544 4,278,172

CLASS 208

309 4,278,529

CLASS 209

3 4,278,530
11 4,278,531
19 4,278,532
166 4,278,533
211 4,278,534
399 4,278,535
422 4,278,536
469 4,278,537
522 4,278,173
580 4,278,538

CLASS 210

107 4,278,540
112 4,278,541
321.3 4,278,542
403 4,278,543
503 4,278,544
521 4,278,545
626 4,278,546
629 4,278,547
636 4,278,548
695 4,278,549
724 4,278,539
741 4,278,550
767 4,278,551

CLASS 211

40 4,278,174
41 4,278,175
74 4,278,176
116 4,278,177

CLASS 215

215 4,278,178
245 4,278,179
252 4,278,180

CLASS 217

118 4,278,288

CLASS 219

10.55 B 4,278,862
73.1 4,278,863
75 4,278,864
99 4,278,865
121 EC 4,278,866
121 LD 4,278,867
123 4,278,868
217 4,278,869
219 4,278,870
384 4,278,871
497 4,278,872
501 4,278,873
505 4,278,874
522 4,278,875
535 4,278,876
544 4,278,877

CLASS 220

89 A 4,278,181

CLASS 221

5 4,278,182
104 4,278,185
211 4,278,183
233 4,278,184

CLASS 222

36 4,278,186
153 4,278,187
182 4,278,188
321 4,278,189
561 4,278,190

CLASS 224

42.21 4,278,191
315 4,278,192

CLASS 225

2 4,278,193

CLASS 227

18 4,278,194

CLASS 228

123 4,278,195

CLASS 229

30 4,278,196
4,278,197
4,278,198
92.8 4,278,199

CLASS 233

16 4,278,200
27 4,278,201
4,278,202

CLASS 235

92 PK 4,278,878
380 4,278,879
493 4,278,880

CLASS 238

14 4,278,203
349 4,278,204

CLASS 239

75 4,278,205
327 4,278,206

CLASS 241

4 4,278,207
16 4,278,208
30 4,278,209
222 4,278,210
4,278,211

CLASS 242

54 R 4,278,212
75.1 4,278,213
106 4,278,214
107.2 4,278,215
107.4 A 4,278,216
217 4,278,217

CLASS 244

100 R 4,278,219
110 B 4,278,220
136 4,278,221

CLASS 248

121 4,278,222
125 4,278,223
246 4,278,224
311.3 4,278,225
314 4,278,226
487 4,278,227
548 4,278,228

CLASS 249

11 4,278,229
81 4,278,230
95 4,278,231
183 4,278,232

CLASS 250

227 4,278,881
255 4,278,882
277 CH 4,278,883
315.2 4,278,884
370 4,278,885
393 4,278,886
432 4,278,887
445 T 4,278,888
4,278,889
492 B 4,278,890
505 4,278,891
506 4,278,892
548 4,278,893

CLASS 251

57 4,278,233
4,278,234
144 4,278,235
159 4,278,236

CLASS 252

3 4,278,552
50 4,278,553
52 A 4,278,555
52 R 4,278,554
62.54 4,278,556
171 4,278,557
186 4,278,558
301.1 R 4,278,559
4,278,560
408 4,278,561
430 4,278,562
441 4,278,563
450 4,278,564
455 Z 4,278,565
465 4,278,566
466 J 4,278,567
472 4,278,568
522R 4,278,569
546 4,278,570
558 4,278,571

CLASS 254

134.3 FT 4,278,238
134.3 PA 4,278,237
323 4,278,239

CLASS 260

3 4,278,572
17.4 GC 4,278,573
22 CB 4,278,574
4,278,575
23 AR 4,278,576
23 H 4,278,577
27 R 4,278,578
29.2 EP 4,278,580
29.3 4,278,579
29.6 AN 4,278,582
29.6 M 4,278,581
29.7 H 4,278,583
38 4,278,584
42.15 4,278,585
42.18 4,278,586
42.37 4,278,587
45.7 P 4,278,588
45.75 D 4,278,591
45.8 NT 4,278,589
4,278,590
112 B 4,278,592
4,278,594
112 R 4,278,593
112.5 R 4,278,595
4,278,596
123.5 4,278,597
157 4,278,598
207 4,278,599
239.1 4,278,600
314.5 4,278,601
345.1 4,278,602
345.3 4,278,603
346.74 4,278,604
367 4,278,605
380 4,278,606
383 4,278,607
401 4,278,608
409 4,278,609
438.1 4,278,610
448 AD 4,278,611
453 RZ 4,278,612
465 D 4,278,613
465.3 4,278,614
502 R 4,278,615
512 C 4,278,616

CLASS 261

30 4,278,617
34 A 4,278,618
62 4,278,619
109 4,278,620
114 R 4,278,621

CLASS 264

11 4,278,622
28 4,278,623
37 4,278,624
39 4,278,625
40.1 4,278,626
45.4 4,278,627
45.5 4,278,628
46.8 4,278,629
60 4,278,630
64 4,278,631
66 4,278,632
134 4,278,633
168 4,278,634

CLASS 266

216 4,278,240
241 4,278,241
263 4,278,242

CLASS 269

16 4,278,243
17 4,278,244
22 4,278,245
220 4,278,246

CLASS 272

56.5 R 4,278,247
68 4,278,248
94 4,278,249
113 4,278,250

CLASS 273

73 G 4,278,251
118 R 4,278,252
121 R 4,278,253
183 C 4,278,254
248 4,278,255
368 4,278,256
411 4,278,257

CLASS 277

12 4,278,259
40 4,278,218
110 4,278,260
153 4,278,261
212 FB 4,278,262

CLASS 279

1 R 4,278,263

CLASS 280

11.28 4,278,264
160.1 4,278,265
276 4,278,266
406 R 4,278,267
605 4,278,268
613 4,278,269
675 4,278,270
687 4,278,271
708 4,278,272
802 4,278,273
821 4,278,274

CLASS 285

12 4,278,275
49 4,278,276
93 4,278,277
143 4,278,278
255 4,278,279

CLASS 290

44 4,278,894
52 4,278,895
55 4,278,896

CLASS 292

263 4,278,280
320 4,278,281

CLASS 293

132 4,278,282

CLASS 296

26 4,278,283
36 4,278,284
78.1 4,278,285
93 4,278,286

CLASS 297

59 4,278,287
188 4,278,289
362 4,278,290
391 4,278,291

CLASS 299

5 4,278,292
31 4,278,293
34 4,278,294
69 4,278,295
87 4,278,296

CLASS 301

6 D 4,278,297

CLASS 303

3 4,278,298
6 C 4,278,299
115 4,278,300

CLASS 305

11 4,278,301
35 EB 4,278,302
57 4,278,303

CLASS 307

304 4,278,899
311 4,278,900
350 4,278,901
426 4,278,902
455 4,278,897
514 4,278,903
528 4,278,898

CLASS 308

6 C 4,278,305
4,278,306
6 R 4,278,304
201 4,278,307

CLASS 310

27 4,278,904
52 4,278,905
4,278,906
191 4,278,907

CLASS 312

330 R 4,278,308
343 4,278,309

CLASS 313

177 4,278,908
217 4,278,909
220 4,278,910
318 4,278,911
331 4,278,912
495 4,278,913

CLASS 315

3.5 4,278,914
39.71 4,278,915
92 4,278,916
169.1 4,278,917
169.4 4,278,918
393 4,278,919

CLASS 316

24 4,278,310

CLASS 318

2 4,278,920
254 4,278,921
264 4,278,922
302 4,278,923
314 4,278,924
4,278,925
696 4,278,926
721 4,278,927

CLASS 322

29 4,278,928

CLASS 323

285 4,278,930
311 4,278,929

CLASS 324

52 4,278,931
57 R 4,278,932
58 R 4,278,933
61 P 4,278,934
4,278,935
71 CP 4,278,936
86 4,278,937
117 R 4,278,938
4,278,939
127 4,278,940
341 4,278,941
347 4,278,942

CLASS 328

127 4,278,943

CLASS 329

103 4,278,944

CLASS 330

278 4,278,945
288 4,278,946

CLASS 331

1 R 4,278,947
94.5 C 4,278,948
94.5 G 4,278,950
94.5 H 4,278,949
96 4,278,951

CLASS 332

1 4,278,952
7.51 4,278,953
9 T 4,278,954

CLASS 333

33 4,278,955
81 A 4,278,956
202 4,278,957

CLASS 335

16 4,278,958
262 4,278,959

CLASS 337

365 4,278,960

CLASS 338

21 4,278,961

CLASS 339

17 CF 4,278,311
38 4,278,312
49 R 4,278,313
99 R 4,278,314
113 B 4,278,315
258 R 4,278,316
4,278,317

CLASS 340

34 4,278,962
64 4,278,963
347 DA 4,278,964
365 P 4,278,965
366 R 4,278,966
539 4,278,967
545 4,278,968
576 4,278,969
599 4,278,970
635 4,278,971
703 4,278,972
721 4,278,973
784 4,278,974

CLASS 343

6 R 4,278,975
6.5 LC 4,278,977
6.5 R 4,278,976
100 CL 4,278,978
703 4,278,979
748 4,278,980

CLASS 346

108 4,278,981
4,278,982
140 R 4,278,983
4,278,984

CLASS 350

3.78 4,278,318
4,278,319
26 4,278,320
96.12 4,278,321
96.18 4,278,322
96.20 4,278,323
288 Re.30,673
4,278,324
331 T 4,278,325
343 4,278,326
347 V 4,278,327
349 4,278,328
357 4,278,329
411 4,278,330
4,278,331

CLASS 352

87 4,278,332
170 4,278,333

CLASS 353

85 4,278,334

CLASS 354

3 4,278,335
51 4,278,336
60 R 4,278,337
83 4,278,338
155 4,278,339
195 4,278,340

CLASS 355

3 CH 4,278,342
3 SH 4,278,341
10 4,278,343
14 SH 4,278,344
15 4,278,345
45 4,278,346
68 4,278,347
73 4,278,348

CLASS 356

44 4,278,349
155 4,278,350
345 4,278,351
358 4,278,352
416 4,278,353

CLASS 357

15 4,278,985
33 4,278,986
48 4,278,987
51 4,278,988
59 4,278,989
81 4,278,990
4,278,991

CLASS 358

13 4,278,992
22 4,278,993
25 4,278,994
54 4,278,995
136 4,278,996
194.1 4,278,997
198 4,278,998
213 4,278,999
4,279,000
4,279,001
257 4,279,002
280 4,279,003

CLASS 360

48 4,279,004
66 4,279,005
90 4,279,006

CLASS 361

44 Re.30,678
47 4,279,007
194 4,279,008

CLASS 363

35 4,279,009
60 4,279,010
133 4,279,011

CLASS 364

104 4,279,012
105 4,279,013
200 4,279,014
4,279,015
4,279,016
484 4,279,017
514 4,279,018
523 Re.30,679
569 4,279,019
900 4,279,020
4,279,021
4,279,022

CLASS 365

174 4,279,023
203 4,279,024

CLASS 366

78 4,278,354
300 4,278,355

CLASS 367

3 4,279,025
70 4,279,026
125 4,279,027

CLASS 368

11 4,279,028
29 4,279,029
63 4,279,030
82 4,279,031

CLASS 369

36 4,278,258
128 4,278,846

CLASS 370

15 4,279,032
29 4,279,033

CLASS 371

8 4,279,034

CLASS 400

59 4,278,356
144.2 4,278,357
4,278,358
303 4,278,359

CLASS 401

151 4,278,360

CLASS 403

189 4,278,361

CLASS 404

117 4,278,368

CLASS 405

191 4,278,362
260 4,278,363
273 4,278,364

CLASS 406

30 4,278,365
88 4,278,366
109 4,278,367

CLASS 407

113 4,278,369
115 4,278,370

CLASS 408

76 4,278,371
183 4,278,372
188 4,278,373

CLASS 409

74 4,278,374

CLASS 410

26 4,278,375
130 4,278,376

CLASS 411

47 4,278,006
190 4,278,120
337 4,278,005

CLASS 414

30 4,278,377
32 4,278,378
44 4,278,379
217 4,278,380
349 4,278,381
388 4,278,382
412 4,278,383
4,278,384
419 4,278,385
421 4,278,386
462 4,278,387
534 4,278,388
540 4,278,389
549 4,278,390
559 4,278,391
569 4,278,392
690 4,278,393
694 4,278,394
786 4,278,395

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4,278,863
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4,278,961

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01 : 259,849
04 : 259,844
259,870
06 : 259,825
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259,830

259,831
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259,863
259,866
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259,891
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08 : 259,890
12 : 259,856
19 : 259,873
20 : 259,847

26 : 259,842
259,869
27 : 259,837
259,838
29 : 259,850
36 : 259,820
259,860
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259,879

259,888
259,893
37 : 259,835
259,839
259,840
39 : 259,821
259,872
259,883
259,886

41 : 259,864
42 : 259,887
48 : 259,822
259,824
259,884
51 : 259,843
259,875
55 : 259,823

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